Desert Stateline, LLC

PLAN OF DEVELOPMENT

Stateline Solar Farm

Submitted to:

U.S. BUREAU OF LAND MANAGEMENT

Needles Field Office

San Bernardino County, California

Submitted: **August 17, 2011**

BLM Project Number: **CACA # 48669**

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1.0 INTRODUCTION

Desert Stateline, LLC, (Applicant) a wholly owned subsidiary of First Solar Development, Inc. (First Solar) proposes to develop and construct a 300-megawatt (MW) alternating current (AC) solar photovoltaic (PV) energy generating project known as the Stateline Solar Farm (Project). The PV generating facility (Solar Farm), the corridor for the Project's 220-kilovolt (kV) generation interconnection (gen-tie) transmission line, and the access road would be located on Federal lands managed by the U.S. Department of Interior, Bureau of Land Management (BLM), Needles Field Office. The Proposed Solar Farm is approximately 2 miles south of the California-Nevada border and 0.5 mile west of Interstate 15 (I-15) in eastern San Bernardino County. The Site Plan Package (SPP) provided in Appendix A includes a vicinity map of the Project site and surroundings. The proposed Project would include the Solar Farm, an on-site substation (Project Substation), the 220 kV gen-tie line within the Transmission Corridor, and an access road within an Access Corridor. The Project would connect to the Southern California Edison (SCE) regional transmission grid via SCE's Ivanpah Substation, which is not a part of the Project. This Plan of Development (POD) is part of the BLM Right of Way (ROW) grant application process and has been prepared according to the latest BLM POD Guidelines published on July 3, 2008.

Since submitting the initial Right-of-Way (SF299) application to the BLM, the Applicant has evaluated approximately 6,100 acres (ac) for consideration in siting the proposed Project. The original Project study area, as identified in the September 2010 POD, covered approximately 5,500 ac. After a preliminary resource investigation, an amended Project study area was identified, shifting the location for the Project south and east to avoid known resources. The amended Project study area covers approximately 5,850 ac. The Project study area is largely vacant, undeveloped, and relatively flat land in the Ivanpah Valley, along the western flank of the Ivanpah Dry Lake in the Mojave Desert in eastern San Bernardino County, California. The Primm Valley Golf Club is adjacent to the southeast corner of the Project study area. The Golf Club is accessed via the Yates Well Road exit from I-15, which is also the southern access for the Project study area. There are no known residences within 0.5 mi of the boundary of the Project study area.

At this time, two Project site plans or layouts – Proposed Project (Alternative B) and Alternative B1, or options[1], are being considered. Both alternatives, where electricity would be generated, encompass between 2,150 ac (Alternative B) and 1,900 (Alternative B1) and would consist of the following components:

- Main generation area, which includes the PV arrays, combining switchgear, overhead lines, and access corridors
- Monitoring and maintenance facility
- On-site substation site security and fencing

[1] Within this POD, the terms "alternatives" and "options" are use interchangeably throughout the document.

- Access roads

The proposed Project will help California meet its Renewable Portfolio Standard (RPS) goal, which is currently 20 percent of retail electric power sales from renewable sources by 2010 under existing law (Senate Bill 1078), and 33 percent of electrical power retail sales by 2020 under Executive Orders S-14-08 and S-21-09 issued by Governor Schwarzenegger. Further, the Project is consistent with SB 2X (Simitian), the 33% by 2020 Renewable Portfolio Standard, as signed into law by Governor Brown on April 12, 2011. The Project supports Secretary of the Interior Salazar's Orders 3283 and 3285, which make developing renewable energy a top national priority. The Project will also help the State achieve the 2006 Global Warming Solutions Act (Assembly Bill [AB] 32) greenhouse gas (GHG) reduction targets, which require California's GHG emissions to be reduced to 1990 levels by 2020.

When fully operational, the 300-MW Stateline Solar Farm facility would have the capacity to directly convert solar energy to 300 MW of emission-free power using minimal water and producing no waste. This is equivalent to the amount of energy needed to serve nearly 90,000 local California homes each year, and, compared to the CO_2 emissions that would be emitted if the same amount of electricity was generated from fossil fuels, implementing the Project would avoid emissions of over 165,000 metric tons of carbon dioxide annually – the equivalent of taking almost 32,000 automobiles off the road. The electricity generated by the Project would be sold to SCE to help meet their RPS requirements.
The Project would employ best practices throughout all aspects of development. First Solar's advanced PV technology and an efficient, environmentally-sensitive site layout would maximize renewable energy generation potential while minimizing disruption to the Project site and surrounding environment.

Key attributes of the Stateline Solar Farm include:

- Direct conversion of sunlight to electricity without the use of water in the power generation process (i.e., no need for cooling water or water to generate steam) and without the generation of wastes;
- 300 MW of electrical power, a typical capacity for a modern natural gas-fired combined-cycle power plant in California, generated from a renewable source and producing no carbon (or any other air pollutant) emissions and lower noise levels during power generation;
- Low-profile, uniform PV arrays approximately eight feet in height. No on-site structures, with the exception of utility poles, would be taller than a maintenance building or electrical switchyard;
- Minimal water use during Project operation;
- Desert tortoise fencing along the site perimeter; and
- A pre-funded PV Module Collection and Recycling Program that allows all modules to be collected and recycled at the end of their useful life into new modules or other products.

1.1 PROPONENT INTRODUCTION: FIRST SOLAR

The Applicant, as a wholly owned subsidiary of First Solar, is the development entity for the Project. First Solar is a recognized worldwide leader in solar PV manufacturing and development with a considerable project backlog and stellar environmental health and safety track record. First Solar is a U.S.-based corporation with offices in Tempe, Arizona; Perrysburg, Ohio; Oakland, California; Irvine, California; and Bridgewater, New Jersey. First Solar also has multiple PV module manufacturing facilities, located in Perrysburg, Ohio; Germany; and Malaysia, with a total manufacturing capacity to

exceed 1,300 MW annually by the end of 2010. First Solar's current market capitalization is approximately $10.8 billion (as of August 26, 2010), the largest in the solar power industry.

The Project would utilize First Solar's proven thin film cadmium telluride (CdTe) PV technology, which is readily scalable to the Project's size. First Solar has developed and is continually refining manufacturing technologies that drive down the cost of its modules in order to offer reliable solar power at a price that is cost-competitive with other forms of non-renewable power generation. At the same time, the firm has continued to emphasize methods and programs for manufacturing and construction that are environmentally sustainable, such as its pre-funded module collection and recycling program.
First Solar has manufactured over 2,000 MW of solar PV modules and has the manufacturing capacity to supply the requirements of the Stateline Solar Farm. The majority of First Solar's modules have been placed in service in European Union (EU) countries such as Germany where they have met very stringent EU environmental regulations.

First Solar recently completed the 10 MW El Dorado project in Nevada; a 20 MW project in Sarnia, Ontario, Canada; the 30 MW Cimarron project in New Mexico; and the 21 MW Blythe Solar 1 project in Riverside County, California. The 48 MW Copper Mountain project is currently under construction in Nevada. The 50MW (first phase) Silver State Solar project has recently commenced construction, located northeast of Primm, Nevada. There also are other First Solar PV projects currently in the permitting process in California, such as the 550-MW Desert Sunlight project in Riverside County and the 550-MW Topaz project in San Luis Obispo County.

1.2 PROJECT BACKGROUND

Between December 2006 and December 2008 applications were filed for use of a total of 6,400 acres of Federal land for the Stateline Solar Farm. The Project was originally planned to be a 300 MW project using OptiSolar PV technology. On April 3, 2009, the Applicant for the Project, previously named OptiSolar, underwent a name change as a result of the merger between OptiSolar and First Solar, which resulted in OptiSolar becoming a wholly-owned subsidiary of First Solar. A letter indicating this change was sent to the BLM Needles Field Office on May 4, 2009. On August 5, 2009, First Solar submitted an updated SF 299 application indicating the change of name from OptiSolar, Inc. to First Solar Development, Inc. and to include the lands being considered for the Transmission Corridor. On April 23, 2010, a Draft POD was submitted, which included a redesigned project using First Solar PV modules with Preferred Alternative on 3,011 acres. A much larger Project Study Area than what is required for the Solar Farm has been examined (5,518 acres), allowing First Solar to site the Project within the overall Project Study Area in a manner that is both technically sound and efficient and that also avoids sensitive environmental and other resources. On September 3, 2010 a revised Draft POD was submitted to the BLM. This draft document identified a Preferred Project, currently known as Alternative B.

This revised Draft POD introduces Alternative B1, a refined site layout of Alternative B and designed to avoid known resources.

1.3 TYPE OF FACILITY, PLANNED USES, AND GENERATION OUTPUT

The Stateline Solar Farm is a 300-MW solar PV energy generating facility. The facility would use First Solar's thin film CdTe PV modules to produce clean, renewable energy for California customers. The

project's entire energy output would be purchased by SCE (see Section 4.1.4). The Project includes an approximately 2.3-mile 220-kV gen-tie line to interconnect with the SCE regional transmission system at SCE's planned Ivanpah Substation. First Solar submitted an interconnection request for the project with the California Independent System Operator (CAISO) on January 9, 2007. CAISO's Transition Cluster Phase 2 Study for projects in this area (including the Stateline Solar Farm) was released on August 13, 2010.

1.4 PROJECT PERMITTING AND CONSTRUCTION SCHEDULE

The BLM will be the lead Federal agency for approving the Project and would issue a ROW grant authorizing the Project's construction, operation, and use of Federal lands. The decision regarding the issuance of the ROW grant will be based in part on an evaluation of the Project's potential environmental effects through the National Environmental Policy Act (NEPA) review process and the requirements of the Federal Land Policy and Management Act (FLPMA). The NEPA process will involve the preparation of an Environmental Impact Statement (EIS) that will detail the Project's expected environmental impacts and mitigation measures to avoid or minimize identified impacts. The NEPA review process commences once the BLM deems the POD complete for environmental review, issues a Notice of Intent (NOI) and selects a consultant to prepare the EIS.

The Applicant recognizes the importance of timely and clear communication with involved public agencies and community stakeholders. Early in the Project development process, the Applicant met with public agencies, including the BLM, San Bernardino County Planning Department, as well as with community stakeholders and neighboring landowners**.** These meetings were held to familiarize these groups with the Stateline Solar Farm and to begin addressing their unique needs, concerns, and questions about the Project. The Applicant is currently in the process of working with other applicable Federal, State, and local permitting agencies. These include the U.S. Fish and Wildlife Service (USFWS), the U.S. Army Corps of Engineers (USACE) and the California Department of Fish and Game (CDFG), the County of San Bernardino and other agencies with jurisdiction over the Project in conjunction with the BLM's ROW grant approval process. Section 2.3 of the POD provides detail relating to the Federal, State and local permits required for the Project.

The construction of the Project would not begin until after all applicable approvals and permits have been obtained. First Solar estimates that it would take approximately 2 to 4 years from initial construction mobilization to completion of construction. Table 1-1 shows key milestone dates associated with Project permitting and approvals, as well as Project construction. Once construction is completed, the Project would be in operation for 30 years. Note that the project timing takes into consideration SCE's El Dorado to Ivanpah transmission project, including the Ivanpah substation, which is anticipated to be completed in July 2013.

Table 1-1 Preliminary Stateline Solar Farm Project Schedule

Project Milestone	Start Date	Date Complete
Draft POD Submittal	April 23, 2010	April 23,2010
Revised Draft POD Submittal	September 3, 2010	September 3, 2010
POD and ROW application reviewed and determined complete for environmental review and application processing	October 1, 2010	October 1, 2010
Second Revised Draft POD Submittal	August 2011	August 2011
BLM issues NOI for EIS	August 4, 2011	August 4, 2011
Project scoping and scoping meeting conducted	August 2011	August 2011
Completion of public scoping period	August 2011	September 6, 2011
BLM issues Notice of Availability (NOA) of Draft EIS	December 2011	December 2011
90-Day DEIS/ Land Use Plan Amendment public review period and meetings	January 2012	March 2012
BLM submits Biological Assessment (BA) to USFWS (starts 135-day consultation)	September 2011	January 2012
USFWS issues Biological Opinion (BO)	January 2012	January 2012
BLM issues NOA of Final EIS/Proposed Land Use Plan Amendment	May 2012	July 2012
Protest Period for Proposed Land Use Plan Amendment	July 2012	August 2012
BLM issues Record of Decision (ROD) / ROW Grant and CPUC issues PTC	August 2012	August 2012
Appeal Period	August 2012	January 2013
Construction Permits (e.g., local building permit and encroachment permits and final pre-construction planning	January 2013	February 2013
Project Construction	March 2013	March 2015/March 2017

Note: SCE estimates that the El Dorado to Ivanpah transmission project, including the Ivanpah Substation, will be completed in July 2013.

1.5 PROPONENT'S PURPOSE AND NEED FOR THE PROJECT

The purpose of this Project is to create a clean, renewable source of electricity that helps meet California's growing demand for power and helps fulfill national and State renewable energy and GHG goals. Solar energy provides a sustainable, renewable source of power that helps reduce fossil fuel dependence and GHG emissions.

The California Energy Commission forecasts that electricity consumption in California will increase by 0.8 percent per year from 2010 to 2018[2]. Peak demand is expected to increase by 1.1 percent annually over the same period. The Project would add 300 MW of renewable generating capacity to California's energy system; in addition, this solar energy would be generated during peak hours of consumption and would help local utilities in meeting increases in peak demand.

This Project will support California in meeting the RPS mandate, which requires California's investor-owned utilities to supply 20 percent of its total electricity through renewable energy generation by the 2010 and 33 percent of its electricity supply from renewable energy by 2020. Further, the Project is consistent with SB 2X (Simitian), the 33% by 2020 Renewable Portfolio Standard, as signed into law by Governor Brown on April 12, 2011.

In addition, the Project will help meet the goals set forth in AB 32, which requires that the State's GHG emissions be reduced to 1990 levels by 2020, a roughly 25 percent reduction compared to business-as-usual estimates. Considering the entire process, from raw material sourcing through end-of-life-cycle collection and recycling, the Project's 300 MW of additional generating capacity would produce a tiny fraction of the GHG emissions of a similar-capacity fossil fuel plant.

Federal policy requires government agencies to facilitate the development of renewable energy sources. Executive Order 13212, issued in May 2001, mandates that Federal agencies act expediently and in a manner consistent with applicable laws to increase the "production and transmission of energy in a safe and environmentally sound manner." The Energy Policy Act of 2005 requires the Department of the Interior (of which BLM is a part), to approve at least 10,000 MW of renewable energy generation on public lands by 2015. In early 2009, Secretary of Interior Salazar issued Orders 3283 and 3285, making the production, development, and delivery of renewable energy top priorities for the Department of Interior.

Solar electricity generation is an important component of each of the Federal and State policy goals described above. Among other desirable attributes, the Stateline Proposed Solar Farm provides excellent solar resource availability and contains lands that are open, generally flat and uniquely situated near existing transmission lines and roadways. Due to its priority interconnection position with the CAISO, the Project will interconnect to a newly-upgraded 220 kV transmission line, the El Dorado-Ivanpah line.

Part of the government's efforts to promote renewable energy depend on the ultimate development of increasingly economical facilities that drive down the price of renewable energy, and ultimately enable it to compete in the market place with fossil fuel facilities. The development of large, utility-scale projects enables solar panel manufacturers such as First Solar to achieve significant economies of scale in the manufacturing process. This is evidenced by the company's success in driving down the cost of solar modules from $3 per watt five years ago when the company's annual output was 25 MW, compared to today when the cost has been driven to 75 cents/watt (as of Quarter 2, 2011), with over 1,600 MW of manufacturing capacity.

2 California Energy Commission. June 2009. California Energy Demand 2010-2020. Staff Draft Forecast. Staff Draft Report. CEC-200-2009-012-SD.

Additional Project objectives include:

- Establish 300 MW of generating capacity for emission-free PV solar electricity in an area of high solar insolation and in proximity to existing transmission infrastructure, while avoiding, minimizing, and mitigating the impacts to environmentally sensitive areas;
- Develop a project that is feasible to construct and operate while providing utility customers with a cost-competitive, cleaner alternative to conventionally generated electricity;
- Provide community benefits, through new jobs, spending in local businesses and additional sales tax revenues;
- Employ an average of approximately 400 on-site workers during the 2 to 4 year construction period;
- Interconnect to the newly-upgraded SCE El Dorado-Ivanpah transmission line, which is in a federally designated transmission corridor near the project site; and
- Generate electricity in an arid environment with minimal water use.

The Applicant is considering several alternatives for siting the Solar Farm within the overall Project Study Area.

The Applicant's selection of the Project Study Area and Alternatives B and B1 over other alternatives is based on a number of criteria. These siting criteria include; 1) a contiguous site with flat topography that is large enough for a 300 MW facility, 2) avoiding areas that are sensitive, such as designated wilderness, Areas of Critical Environmental Concern (ACECs), washes, etc., 3) avoiding high quality habitat for listed species (e.g., choosing a Project site in Category III [lowest quality] desert tortoise habitat, 4) proximity to 220-kV (or higher) transmission facilities with sufficient capacity for project output and suitable locations for interconnection, and 5) good highway access.

2.0 PROJECT DESCRIPTION

2.1 PROJECT STUDY AREA

The Project Study Area is a largely vacant, undeveloped, and relatively flat land area located in the Ivanpah Valley of the Mojave Desert in eastern San Bernardino County, along the western flank of Ivanpah Dry Lake. - Alternatives B and B1 (preferred site plans) are located approximately 2 miles south of the California-Nevada border and 0.5 mile west of U.S. Interstate 15 (I-15) (Appendix A).

The locations of the Project Study Area and Alternatives B and B1 are shown in Appendices A and B, respectively. The Project Study Area encompasses approximately 5,500 acres. This acreage includes 5,454 acres studied for siting of the Solar Farm and 64 acres considered for the Transmission Corridor route between the Solar Farm and the Ivanpah Substation.

The Project Study Area consists of substantially more acreage than will ultimately be needed for the Project, so that the necessary studies (i.e., biological and cultural surveys) of a reasonable range of Proposed Solar Farm layouts and Transmission Corridor alternatives can be analyzed allowing the Project realize its goals with the most suitable and feasible alternative.

2.1.1 Proposed Solar Farm and Access Corridor

As shown in Appendix A, Alternative B encompasses approximately 2,114 acres. The site would be accessed via a 25-foot-wide, 1.7-mile-long gravel access road (Appendix A), which is included in the Proposed Solar Farm acreage. Alternative B1 requires approximately 1,900 acres for site layout. The portions of the Project Study Area considered for Alternatives B and B1 and the Access Corridor are located entirely on BLM-managed public land that is largely undeveloped, but is crossed by several existing unimproved roads and transmission lines and contains previously disturbed lands (Appendix A).

2.1.2 Transmission Corridor and Substation Interconnection Location

The Project expects to interconnect with the regional transmission system via a 220-kV gen-tie line that will exit the southwestern portion of the Proposed Solar Farm and follow a 150-foot-wide transmission ROW (Transmission Corridor) to SCE's proposed Ivanpah Substation, which would be located approximately 2.3 miles south of the Proposed Solar Farm (Appendix A).

2.2 GENERAL FACILITY DESCRIPTION, DESIGN, AND OPERATIONS

2.2.1 Existing Site Conditions

The Project Study Area is a vacant, undeveloped, and relatively flat land area located in the Ivanpah Valley along the western flank of Ivanpah Dry Lake in eastern San Bernardino County, approximately 2 miles south of the Nevada-California border and 0.5 mile west of I-15 (Appendix A). The entire Project Study Area, including the transmission line corridor, is on public land administered by the Bureau of Land Management, Needles Field Office. The Project Study Area is located approximately 2 miles southwest of Primm, Nevada and approximately 7 miles north of Wheaton Springs, California. The

Primm Valley Golf Club is located adjacent to the southeast corner of the Project Study Area. The golf club is accessed via the Yates Well Road exit from I-15, which is also the southern access for the Project Study Area. There are no known residences within 0.5 mile of the Project Study Area.

Also located in the vicinity of the Project Study Area is a major natural gas power plant, located about 1.5 miles east of Primm and the Union Pacific Railroad, located about one mile east of the site. The Project Study Area is crossed by two major power transmission corridors, one along the northern border of the Project Study Area, and one running through the south-central portion of the Project Study Area. The Project Study Area is also crossed by a major gas pipeline, which runs parallel and just south of the northern power line corridor (Appendix A).

Several existing uses (transmission corridors, dirt roads, wells, locatable mineral sites, etc.) cross or are located within the Project Study Area and/or Alternatives B and B1 (Appendices A and B). Appendix C provides data on ownership of the known existing easements crossing the Alternatives B and B1 footprint and the Transmission Corridor. Appendix C also provides the locations of the existing uses and easements and the use and dimensions of the corridors, as available, within the respective areas.

The layout and configuration of Alternatives B and B1 accommodate constraints associated with the various easements and facilities to the maximum extent practicable. Appendix A contains ownership map for the Proposed Solar Farm and Transmission Corridor.

2.2.2 Land Use Planning and Use Classification

The entire Project Study Area, including Alternatives B and B1 layouts, Transmission Corridor, and Access Corridor is on Federal land managed by the BLM, Needles Field Office. This land is managed by the BLM pursuant to the California Desert Conservation Area Plan of 1980 as amended (CDCA Plan). The CDCA Plan is an umbrella document which sets the foundation for BLM's management of federal lands throughout the California Desert Conservation Area (CDCA). The CDCA Plan serves as broad guidance for management of land uses and assists BLM in developing subsequent specific plans targeting local management issues in the CDCA. The CDCA Plan encompasses three deserts: the Mojave, the Sonoran, and a small part of the Great Basin and includes 25 million acres (ac) of land, of which 12 million ac are administered by BLM.

The CDCA Plan is divided into 12 elements. Each element addresses a major issue of public concern (such as recreation or land use) in context of a desert perspective. Each resource is provided with a specific interpretation of multiple class guidelines and allowed activities within those classes. The CDCA Plan designates multiple use classes of lands based on the sensitivities of desert resources and uses for each geographic area. Four multiple use classes (MUCs) are identified in the CDCA Plan and permitted in the CDCA: Class C (Wilderness Uses), Class L (Limited Use), Class M (Moderate Use), and Class I (Intensive Use).

The Project Study Area, including Alternatives B and B1, are within the Class L designation. Specifically, the intent of Class L is as follows:

> To protect sensitive, natural, scenic, ecological and cultural resource values. Public lands designated as Class L are managed to provide for generally lower-

> intensity, carefully controlled multiple use of resources, while ensuring that sensitive values are not significantly diminished.[3]

Table 1 (Multiple-Use Class Guidelines) of the CDCA Plan further clarifies that solar electrical generation facilities may be allowed within Class L lands after NEPA requirements are met. [4]

According to the CDCA Plan, power generating facilities that are not specified in the CDCA Plan will be processed by means of a CDCA Plan Amendment. Therefore, a CDCA Plan Amendment will be required as part of BLM's ROW grant review and approval process (including NEPA review) for the Stateline Solar Farm.

The Project Study Area also lies within the planning area designated under a 2002 amendment to the CDCA Plan, known as the Northern and Eastern Mojave Coordinated Management Plan (NEMO Plan). NEMO amended the CDCA Plan in the following means:[5]

- Establish Regional Standards for Public land Health and set forth guidelines for grazing management.
- Establish two Desert Wildlife Management Areas (DWMAs) encompassing about 312,000 acres that are managed as Areas of Critical Environmental concern for recovery of the desert tortoise.
- Establish the Amargosa River and Carson Slough areas of Critical Environmental Concern in the Armargosa watershed for management of additional listed, endemic and sensitive species in the planning area, and upgrade the multiple-use class and develop programmatic protection measures on a adjacent area with sensitive bat species.
- Eliminate the Clark Mountain Herd Management Area for wild horses and burros in the Ivanpah DWMA and adjust the Appropriate Management Level (AML) from 44 to 0 throughout the herd area to provide for recovery of the desert tortoise.
- Establish six segments of rivers in the planning area as eligible for further suitability study for the National Wild and Scenic Rivers System.
- Designate routes of travel.
- Identify priorities for acquisition of private lands and disposal of public lands.
- Incorporate 23 wilderness areas (1.2 million) established by the 1994 California Desert Protection Act in the CDCA, and identify multiple use class for 475,000 of lands released from wilderness consideration.

Implementation of Alternatives B and B1 would not adversely affect, influence or hinder any of these NEMO actions.

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[3] California Desert Conservation Area Plan, U. S. Department of the Interior, Bureau of Land Management, p13

[4] Ibid, p 15

[5] Record of Decision for Approved Northern & Eastern Mojave Desert Management Plan, An amendment to the California Desert Conservation Area Plan 1980, U.S. Department of the Interior, Bureau of Land Management, California Desert District Office, December 2002

New transmission facilities are allowed in Class L if they are located within designated corridors. The proposed transmission line to SCE's future Ivanpah Substation is within two, overlapping designated utility corridors, CDCA Utility Corridor BB and West-wide Energy Corridor 225-27

The Project Study Area and Alternatives B and B1 are located within the jurisdictional boundaries of the County of San Bernardino. Typically, a local municipality such as the County exercises land use policy and control through its General Plan and Land Use Zoning Ordinance. However, the County of San Bernardino General Plan Land Use Element states that "lands that are controlled by other jurisdictions, including lands controlled by federal and state agencies, as well as incorporated cities are mapped to identify the public agencies that control them."[6] As a result, the Land Use maps in the General Plan Land Use Element do not show any County land use designations for lands managed by other agencies such as the BLM. Therefore, the BLM is granted land use authority on the Federal lands managed by the BLM which are within the County's jurisdiction and, therefore, County's General Plan land use policies would not be applicable to those lands.

With the exception of issuing a permit for the construction of a water well, San Bernardino County will not have discretionary review or permit authority over the Project.

The Project Study Area is not located within the boundaries of any ACEC, Designated Wildlife Management Area (DWMA), Wilderness Area, Wilderness Study Area, or Critical Habitat Unit (CHU) (Appendix A). The Project Study Area is less than 2 miles west of the Ivanpah Valley DWMA/ACEC and approximately 3.5 miles northwest of the Ivanpah CHU. The Clark Mountain ACEC is located approximately 4 miles to the west. The Stateline Wilderness Area is located less than 1 mile to the northwest and the Mesquite Wilderness Area is located immediately west of the Stateline Wilderness Area. The Mojave Wilderness area is located approximately 6 miles west of the Project Study Area.

2.2.3 Geological Conditions

The Project is located within the Ivanpah Valley, which is bounded by a series of alluvial fans that slope gently toward Ivanpah Dry Lake. The Project Study Area is generally bounded by the Clark Mountains to the north and west and the Lucy Gray Mountains to the east. While the Project Study Area is located almost entirely within mapped alluvial and lakebed sediments ranging from Pleistocene to Holocene in age, it should be noted that the southwestern portion of the Project Study Area contains an outcropping of Precambrian igneous and metamorphic rock.

Maximum change in ground surface elevation across the site is approximately 130 feet. The upper portions of the alluvial fans slope gently toward Ivanpah Dry Lake with a change in ground elevation on the order of 15 feet of fall per 500 yards of horizontal run (slope of 100:1 horizontal to vertical) or less. The central portion of the site is relatively flat with a change in ground elevation on the order of less than 5 feet of fall per 500 yards of horizontal run (slope of 300:1 horizontal to vertical) or less. The general slope and drainage is toward Ivanpah Dry Lake, except where locally modified by manmade features such as access roads.

[6] County of San Bernardino General Plan, Land Use Element, p 11-3 (2007)

A Phase I Geotechnical Reconnaissance Report was prepared for the Project Study Area in July 2008, which determined that the proposed development of the site was considered feasible from a geologic standpoint (Appendix E). A total of thirteen shallow exploratory borings were advanced using a hand auger at various locations across the site to a maximum depth of 9 feet below the existing ground surface. Laboratory samples were tested for density and moisture content, particle size, direct shear, water soluble sulfate (for concrete requirements), corrosion, and thermal conductivity. While the Project Study Area is located almost entirely within mapped alluvial and lakebed sediments from Pleistocene to Holocene in age, the southwestern portion of the Project Study Area contains an outcropping of Precambrian igneous and metamorphic rock.

The Project Study Area is in seismically active southern California, but it does not lie within a designated earthquake fault zone as defined by the Alquist-Priolo Act of 1972 and no faults have been mapped within the Project Study Area. Published geologic maps show three faults near the Project Study Area (Appendix E). The Stateline Fault is located roughly parallel and adjacent to the California-Nevada State Boundary, trending from the southeast to the northwest; this fault is shown on maps as completely concealed beneath alluvial deposits and its approximate location is mapped approximately 2 miles from the northern boundary of the Project Study Area. Two smaller faults exist to the northwest of the project site. Both faults trend toward the northwestern portion of the Project Study Area but are concealed by alluvial deposits. No known recent surface rupture has been associated with any of these faults.

The closest active faults are the Death Valley Fault, located 51 miles west of the Project Study Area; the Garlock Fault, located 52 miles west of the Project Study Area; and the Black Hills Fault, located 52 miles northeast of the Project Study Area. A search of the earthquake catalogues for California and Southern Nevada identified one earthquake with a magnitude of 5.0 or greater and 10 earthquakes with a magnitude of 4.0 or greater that have occurred within a 100 kilometer radius of the Project Study Area since 1800. Historically, the most severe shaking at the site occurred during a 5.0 magnitude earthquake on May 5, 1939. The published epicenter for this earthquake was located approximately 40.5 miles northeast of the site. Based on the existing geologic information from the site, earthquake-induced ground rupture would not be a significant hazard at the site, but moderate ground shaking should be expected at the site during an earthquake as a result of the proximity of three active faults located approximately 50 miles from the site.

The Project Study Area is considered to have a moderate potential for liquefaction based on the general seismicity of the area, the potential for groundwater beneath the site, and the area's location within an alluvial valley. Landsliding is not considered a significant concern due to the largely flat topography.

The Phase I Geotechnical Report prepared for the Project indicates that the proposed development of the site is considered feasible from a geologic/geotechnical standpoint. A comprehensive geotechnical investigation report of the Project Study Area, which includes a comprehensive geotechnical survey, subsurface exploration, and evaluation of geotechnical constraints, is expected to be completed in fall 2010. The geotechnical evaluation will include drilling, logging, and sampling of a large number of exploratory borings across the entire site, laboratory testing of encountered soils from various depths, and the preparation of a design-level geotechnical evaluation report.

2.2.4 Hydrological Conditions

Regional Hydrology. The Project Study Area is located within the Ivanpah Valley, an 875-square-mile topographically closed basin located in both California and Nevada. Surface water in the watershed drains

to and evaporates from either Ivanpah Lake or Roach Lake. The Project Study Area is located in the approximately 340,000 acre Ivanpah South (California) portion of the Ivanpah Valley. Ivanpah South includes the 35-square-mile Ivanpah Lake, several ephemeral waterways, and scattered springs along the mountain front. Overall surface drainage in Ivanpah South is toward Ivanpah Lake.[7]

The Ivanpah Valley is underlain by a large groundwater basin, the Ivanpah Valley Groundwater Basin. The groundwater basin trends north-south and includes areas in both California and Nevada. The Ivanpah Groundwater Basin is bounded by the bedrock of the Bird Springs Range on the north; the Sheep Mountains, Lucy Grey Range, and New York Mountains on the east; and by the Spring Mountains, Clark Mountains, and Ivanpah Mountains on the west. A low topographic divide separates Ivanpah Valley and Shadow Valley to the south. Groundwater flow in the Ivanpah Groundwater Basin is generally toward the northeast. Within Ivanpah South, groundwater flow is generally toward Ivanpah Lake. Groundwater quality varies throughout the Basin, with high levels of fluoride and sodium seen in some parts of the basin (DWR 2004).

A groundwater availability analysis was completed for the proposed Project. This analysis reviewed past and recent studies, the existing groundwater budget, recharge sources and quantities, and existing and proposed extraction rates. The analysis concluded that the precipitation recharge and water-use returns exceed the current and expected future pumping, and therefore groundwater is available within the Ivanpah South portion of the Ivanpah Valley to adequately supply the propose Project's construction and operational life.[8]

Project Study Area Hydrological Analysis. A Hydrology and Hydraulics Report has been completed for the Alternative B and B1. The analyses for these alternatives are summarized below.

Methodology. Drainage basins were determined from available USGS maps as well as 1-foot topographic contours generated from overflight of the Project Study Area. The hydrology analysis conforms to the *San Bernardino County Hydrology Manual*, with implementation of the Clark County Regional Flood Control District's analysis of alluvial fans.

Alternative B

Existing Condition. There are seven existing drainage basins crossing the Project Study Area. Flows are generally from west to east, toward Ivanpah Dry Lake. Two large natural washes cross the Project Study Area. Flow rates for the 1.2-year, 10-year, 25-year, and 100-year, 24-hour duration storm events were calculated using the San Bernardino Unit Hydrograph Version 8.1 software. These flow rates are provided in Table 2-1.

[7] California Department of Water Resources (DWR). 2004. *California's Groundwater-Bulletin 118. Basin Descriptions: Ivanpah Valley Groundwater Basin,* www.groundwater.water.ca.gov/bulletin118/basin_desc/basins_s.cfm.

[8] Stateline Solar Farm, Ivanpah Valley, California, Groundwater Availability, West Yost Associates, July 2011, p. 6-1

Table 2-1 Existing Peak Flow Rates

Basin[1]	Area (acres)	Area (sq. miles)	24-Hour Storm Event (cubic feet per second)			
			1.2-Year Event	10-Year Event	25-Year Event	100-Year Event
EX1	3,360	5.25	550	2,648	3,592	5,743
EX2	3,455	5.40	406	2,118	2,897	4,770
EX3	6,657	10.26	556	3,237	4,451	7,473
EX4	2,453	3.83	265	1,560	2,158	3,661
EX5	3,125	4.88	328	1,890	2,606	4,395
EX6	1,526	2.38	270	1,253	1,712	2,731
EX7	3,621	5.66	394	2,188	3,004	5,011

Developed Condition. Project facilities are proposed to be located outside of the 100-year floodplain, except for portions of the perimeter fencing, Transmission Corridor, and Access Corridor, which cross the south wash. To analyze the developed condition, the curve number (CN) value within the project site boundary was changed from a desert cover type to a graded cover type. Table 2-2 summarizes the developed condition peak flow rate, and Table 2-3 compares the existing condition to the developed condition.

Table 2-2 Developed Condition Peak Flow Rates

Basin[1]	Area (acres)	Area (sq. miles)	24-Hour Storm Event (cubic feet per second)			
			1.2-Year Event	10-Year Event	25-Year Event	100-Year Event
DEV1	3,360	5.25	557	2,661	3,605	5,751
DEV2	3,455	5.40	417	2,142	2,923	4,787
DEV3	6,657	10.26	567	3,266	4,483	7,494
DEV4	2,453	3.83	271	1,573	2,172	3,670
DEV5	3,125	4.88	331	1,899	2,616	4,402
DEV6	1,526	2.38	270	1,253	1,712	2,731
DEV7	3,621	5.66	394	2,188	3,004	5,011

Notes: [1] Numbered basin locations are the same for the existing condition and the developed condition, but the notation "DEV" has replaced "EX" to indicate the developed condition or the existing condition, respectively.

Table 2-3 Flow Rate Comparison

Basin	1.2-Year Event		10-Year Event		25-Year Event		100-Year Event	
	Change in Flow (cfs)	Change in Flow (%)	Change in Flow (cfs)	Change in Flow (%)	Change in Flow (cfs)	Change in Flow (%)	Change in Flow (cfs)	Change in Flow (%)
EX1-DEV1	7	1.30	12	0.47	13	0.37	8	0.14
EX2-DEV2	12	2.94	24	1.13	26	0.88	17	0.35
EX3-DEV3	11	1.94	29	0.90	32	0.71	20	0.27
EX4-DEV4	5	2.06	13	0.84	14	0.65	9	0.25
EX5-DEV5	4	1.20	9	0.49	10	0.38	6	0.15
EX6-DEV6	0.3	0.11	0.3	0.02	0.3	0.02	0.1	0.00
EX7-DEV7	0.2	0.06	0.3	0.01	0.3	0.01	0.1	0.00
Total Change (cfs)	40		89		96		61	
Average Change (%)		1.37		0.55		0.43		0.17

Note: cfs = cubic feet per second

As indicated in the grading plans, to minimize scour, the proposed grading design consists of the cut and fill method in conjunction with the disc, contour grade, and roll method. Approximately 39 percent of the site (719 acres) would be graded with the cut and fill method and approximately 61 percent of the site (1,841 acres) would be developed with the disc, contour grade, and roll method. Native material would be returned to compacted graded areas. The sheet graded areas would eliminate existing low points that convey concentrated runoff. The elimination of these low points would force the runoff to exit the site in a shallow and low-velocity manner. Boundary conditions would also be matched within one foot on all sides. The two natural washes designated as the north wash and south wash would remain native.

Debris basins along the upstream side of array areas area also proposed. The debris basin will be constructed along the western boundary of the Proposed Solar Farm, excluding the two native drainages, which would not be disturbed. The basins would allow upstream flows to be harnessed prior to entering the site and would collect bed load currently transported down the alluvial fan. The basins would be excavated below natural ground surface to prevent a backwater effect from occurring upstream. Adequately sized rip rap will be provided along the western (upstream) side slope of the basins for erosion control. The captured bed load would be redistributed along the lower (eastern) extent of the array area after storm occurrences. Suspended sediment load would remain in the solution of storm water and would continue over the basins, across the site, and deposit onto Ivanpah Dry Lake similar to current conditions.

Water Quality/Sedimentation. There will be a slight volume increase in flow (between 0.17% and 1.37%) with the Preferred Alternative (Table 2-3), showing nominal change from historic conditions. Sediment basins sized to capture the increase in volume for the 1.2-year storm have been proposed along the downstream boundary of the site. The flow intercepted by these basins will stagnate and retain the change in sediment occurring in the 1.2-year storm. By providing these sediment basins, the natural

pattern of sediment pattern will not be compromised. The combined effect of debris basins, sheet grading, and sediment basins will be to attenuate the peak flows. Runoff will enter she site as equivalently-distributed sheet flow. Because this flow will be at a shallow depth, velocities will be decreased but the volumes will be maintained. Flow exiting the site will be distributed back into the shallow braided channels to the east. The peak flows and historic storm water outlet locations entering Ivanpah Dry Lake will be maintained.

Alternative B1

Existing Condition. There are eight existing drainage basins crossing the Project Study Area. Flows are generally from west to east, toward Ivanpah Dry Lake. Two large natural washes cross the Project Study Area. Flow rates for the 1.2-year, 10-year, 25-year, and 100-year, 24-hour duration storm events were calculated using the San Bernardino Unit Hydrograph Version 8.1 software. These flow rates are provided in Table 2-4.

Table 2-4 Existing Peak Flow Rates

Basin[1]	Area (acres)	Area (sq. miles)	24-Hour Storm Event (cubic feet per second)			
			1.2-Year Event	10-Year Event	25-Year Event	100-Year Event
EX1	5,368	8.39	530	2,927	4,009	6,624
EX2	6,485	10.13	548	3,134	4,301	7,215
EX3	2,453	3.83	280	1,602	2,213	3,742
EX4	3,132	4.89	326	1,884	2,597	4,381
EX5	3,829	5.98	419	2,346	3,229	5,420
EX6	4,147	6.48	432	2,358	3,225	5,334
EX7	6,232	9.74	554	3,329	4,604	7,835
EX8	2,881	4.50	348	1,773	2,416	3,947

Developed Condition. Project facilities are proposed to be located outside of two natural washes (north and south wash), except for portions of the perimeter fencing, Transmission Corridor, and Access Corridor, which cross the south wash. These natural washes have been indicated as the 100-year area of inundation on the Master Grading Plan. To analyze the developed condition, the curve number (CN) value within the project site boundary was changed from a desert cover type to a graded cover type. Table 2-5 summarizes the developed condition peak flow rate, and Table 2-6 compares the existing condition to the developed condition.

Table 2-5 Developed Condition Peak Flow Rates

			24-Hour Storm Event (cubic feet per second)			
Basin[1]	**Area (acres)**	**Area (sq. miles)**	**1.2-Year Event**	**10-Year Event**	**25-Year Event**	**100-Year Event**
DEV1	5,368	8.39	541	2,950	4,033	6,638
DEV2	6,485	10.13	557	3,160	4,329	7,233
DEV3	2,453	3.83	285	1,615	2,226	3,751
DEV4	3,132	4.89	329	1,891	2,605	4,386
DEV5	3,829	5.98	419	2,346	3,229	5,420
DEV6	4,147	6.48	437	2,367	3,235	5,340
DEV7	6,232	9.74	561	3,346	4,622	7,847
DEV8	2,881	4.50	349	1,774	2,417	3,948

Notes: [1] Numbered basin locations are the same for the existing condition and the developed condition, but the notation "DEV" has replaced "EX" to indicate the developed condition or the existing condition, respectively.

Table 2-6 Flow Rate Comparison

	1.2-Year Event		**10-Year Event**		**25-Year Event**		**100-Year Event**	
Basin	**Change in Flow (cfs)**	**Change in Flow (%)**	**Change in Flow (cfs)**	**Change in Flow (%)**	**Change in Flow (cfs)**	**Change in Flow (%)**	**Change in Flow (cfs)**	**Change in Flow (%)**
DEV1 - EX1	10	1.97%	23	0.79%	25	0.62%	13	0.20%
DEV2 - EX2	10	1.76%	26	0.84%	29	0.67%	18	0.25%
DEV3 - EX3	5	1.93%	13	0.82%	14	0.62%	9	0.24%
DEV4 - EX4	3	0.93%	7	0.36%	7	0.29%	5	0.11%
DEV5 - EX5	3	0.07%	7	0.01%	7	0.01%	5	0.00%
DEV6 - EX6	0.3	1.03%	0.3	0.38%	0.3	0.31%	0.1	0.12%
DEV7 - EX7	4	1.28%	9	0.50%	10	0.39%	7	0.15%
DEV8 - EX8	0.6	0.17%	1	0.06%	1	0.05%	0.7	0.02%
Total Change (cfs)	37		87		93		57	
Average Change (%)		1.14		0.47		0.37		0.14

Note: cfs = cubic feet per second

As indicated in the grading plan, to minimize scour, the proposed grading design consists of the cut and fill method in conjunction with the disc, contour grade, and roll method. Approximately 31 percent of the site (782 acres) would be graded with the cut and fill method and approximately 69 percent of the site (1,737 acres) would be developed with the disc, contour grade, and roll method. Native material would be returned to compacted graded areas. The sheet graded areas would eliminate existing low points that

convey concentrated runoff. The elimination of these low points would force the runoff to exit the site in a shallow and low-velocity manner. Boundary conditions would also be matched within one foot on all sides. The two natural washes designated as the north wash and south wash would remain native.

Debris basins along the upstream side of array areas area also proposed. The debris basins will be constructed along the western boundary of the Proposed Solar Farm, excluding the two native drainages, which would not be disturbed. The basins would allow upstream flows to be harnessed prior to entering the site and would collect bed load currently transported down the alluvial fan. The basins would be excavated below natural ground surface to prevent a backwater effect from occurring upstream. Adequately sized rip rap will be provided along the western (upstream) side slope of the basins for erosion control. The captured bed load would be redistributed along the lower (eastern) extent of the array area after storm occurrences. Suspended sediment load would remain in the solution of storm water and would continue over the basins, across the site, and deposit onto Ivanpah Dry Lake similar to current conditions.

Water Quality/Sedimentation. There will be a slight volume increase in flow with the Alternative B1, showing nominal change from historic conditions. The average volume increase for the 85 percentile (1.2-year) storm is 1.47%. The average volume increase for the 10-year, 25-year and 100-year storm events are 0.89%, 0.73% and 0.27%, respectively; thus, showing nominal affects to historic conditions. Sediment basins sized to capture the increase in volume for the 85 percentile (1.2-year) storm have been proposed along the downstream boundary of the site. The flow intercepted by these basins will stagnate and retain the change in sediment occurring in the 1.2-year storm. By providing these sediment basins, the natural pattern of sediment pattern will not be compromised. The combined effect of debris basins, low impact contour grading, and sediment basins will be to attenuate the peak flows. Runoff will enter the site as equivalently-distributed sheet flow. Because this flow will be at a shallow depth, velocities will be decreased but the volumes will be maintained. Flow exiting the site will be distributed back into the shallow braided channels to the east. The peak flows and historic storm water outlet locations entering Ivanpah Dry Lake will be maintained.

Project Study Area Hydraulic Analysis.

Methodology. The HEC-RAS software, developed by the US Army Corps of Engineers, was used to obtain water surface profiles associated with the 100-year storm runoff. To determine the worst-case scenario for evaluating potential scour, two methods have been used. The Zeller-Fullerton equation in conjunction with the Zeller Bend scour equation has been used to anticipate scour depth. The FLO-2D software was also used to analyze sediment transport.

Alternative B

Results. The HEC-RAS software was used to simulate runoff crossing the property at the two well-defined natural wash areas (north wash and south wash). The Preferred Alternative would not affect these natural wash areas. With the exception of a portion of the perimeter fencing, Transmission Corridor, and Access Corridor, all permanent facilities would be excluded within 100 feet of the washes, to accommodate potential flow migration. The proposed access roads would cross the wash areas using Arizona crossings. Although the Transmission Corridor crosses the southern wash, the placement of transmission towers within the washes will be avoided. The FLO-2D model was run using the Zeller and Fullerton sediment equation. In addition, the Zeller Bend scour equation was also referenced. This data was used to size the debris basins to accommodate the estimated bed load. The Zeller scour analysis

determined that approximately 4.2-feet of channelized scour could occur during the 100-year flood event. Using the debris basins to dissipate the incoming flow energy will reduce this scour to a level that will not affect the project structures. However, local scour around the PV array support columns is anticipated during major storm events, and maintenance is likely to be required after major storm events to replace soil that has been removed around columns.

Alternative B1

Results. The HEC-RAS software was used to simulate runoff crossing the property at the two well-defined natural wash areas (north wash and south wash). The Alternative B1 would not affect these natural wash areas. With the exception of a portion of the perimeter fencing, Transmission Corridor, and Access Corridor, all permanent facilities would be excluded within 100 feet of the washes, to accommodate potential flow migration. The proposed access roads would cross the wash areas using Arizona crossings. Although the Transmission Corridor crosses the southern wash, the placement of transmission towers within the washes will be avoided. With the 100-year input unit hydrograph a referenced gradation curve within the project study area, the Zeller-Fullerton equation was used to calculate the total bed load material that could potentially impact the site. This data was used to size the debris basins to accommodate the estimated bed load. The Zeller-Fullerton equation in conjunction with the Zeller Bend scour equation was also used to determine that approximately 4.5-feet of channelized scour could occur during the 100-year flood event. Using the debris basins to dissipate the incoming flow energy will reduce this scour to a level that will not affect the project structures. However, local scour around the PV array support columns is anticipated during major storm events, and maintenance is likely to be required after major storm events to replace soil that has been removed around columns.

2.2.5 Biological Resources

The following paragraphs summarize the Biological Resources Technical Report (BRTR) which is included as Appendix F. The BRTR is based on preliminary field work and focused surveys performed in the Project Study Area between 2007 and 2011.

The site is located outside the boundaries of an Area of Critical Environmental Concern (ACEC), Designated Wildlife Management Area (DWMA), BLM wilderness area, or critical habitat unit (CHU) designated by the U.S. Fish and Wildlife Service (USFWS). Human disturbances at the Stateline site include moderate levels of off-highway vehicle (OHV) activity, existing utility corridors (*i.e.*, overhead power transmission lines and underground petroleum pipeline) and associated access roads. The Project Study Area supports two macro vegetation communities: Creosote Bush-White Bursage Series and Mixed Saltbush Series. Creosote Bush-White Bursage Series covers over 97% of the Study Area and is characterized by greater plant diversity within the rocky terrain of the stabilized alluvial fan located within higher elevations (generally above 2,500 feet) within the northern- and southern-most extents of the Study Area. Less than 3% of the Study Area supports Mixed Saltbush Series, which occurs within a relatively narrow band that begins at the edge of the non-vegetated dry lake and extends to the west approximately 800 feet. The site does not support distinctive desert wash or riparian vegetation. Wildlife communities at the site are typical of those found in similar habitats in the northeastern Mojave Desert.

Prior to conducting the site visits, a biological resources literature search was performed. Nineteen special status wildlife species and twenty-two special status plant species were evaluated for their potential to occur. Site visits in 2007 were performed for purposes of mapping vegetation communities, mapping soil types, assessing habitat potential for special status species, and documenting drainage patterns. Focused

surveys for desert tortoise (*Gopherus agassizii)*, golden eagle (*Aquila chrysaetos*), western burrowing owl (*Athene cunicularia*), bat species, and other special status plant and wildlife species were performed between 2008 and 2011.

Desert Tortoise. Full coverage and zone-of-influence surveys for the Federal- and State-listed threatened desert tortoise were performed between 2008 and 2011. Study methodology followed the *U.S. Fish and Wildlife Service (USFWS) 1992 Field Survey Protocol for Any Federal Action that May Occur within the Range of the Desert Tortoise* and *USFWS 2010 Revised Pre-Project Survey Protocols for the Desert Tortoise*. Pedestrian surveys were conducted over the site using linear transects spaced ten meters apart. Zone of influence transects were walked at 100, 300, 600, 1,200, and 2,400-foot intervals from and parallel to the Project Study Area boundaries. All sign (*i.e.*, live tortoises, carcasses, active burrows, inactive burrows, tracks, and scat) attributable to desert tortoise were recorded on standardized datasheets and recorded on Global Positioning Systems (GPS) units. Data were entered into a master database and incorporated into Geographic Information System (GIS) for analysis and presentation. All wildlife species, including special-status species, detected during the focused desert tortoise surveys were recorded.

Thirty-three live tortoises [twenty-eight adults (>160 mm) and five immature (<160 mm)] and 234 burrows/pallets in good-to-excellent condition were observed within the Study Area. In addition, 159 inactive burrows/pallets in poor-to-fair condition were recorded. Observations of active tortoise sign were not evenly distributed throughout the Study Area. Sign of recent tortoise activity was concentrated in three distinct locations: (1) northeast quadrant of Section 22 and southeast quadrant of Section 15, (2) southeastern quadrant of Section 22, and (3) north-central quadrant of Section 23. Other sporadic sign of tortoise activity outside the main concentration areas occurred in Sections 14 and 26. The remaining tortoise observations were more broadly distributed, but generally occurred at higher elevations within the stabilized alluvial fan consisting of rocky, gravelly soils. No tortoises or active burrows were found within 1,700 meters of the western edge of the lakebed. Over 100 carcasses were detected during the surveys; most of which (74%) were estimated to have been greater than 4 years since death.
The USFWS formula for estimating the total number of tortoises within the Study Area resulted in an estimate of approximately 69 adult desert tortoises (95% confidence interval estimates = 27 and 180 adult desert tortoises). Based on this estimate, the tortoise density with the Study Area would be 7.2 tortoises per square mile (95% confidence interval estimates = 2.8 to 18.9 adult desert tortoises per square mile). GIS was used to provide quantitative estimates of desert tortoise potentially affected by the Project. The locations of live desert tortoises and burrows were overlaid with the site layout footprints and live tortoise estimates were generated for each alternative (Table 2-7).

Golden Eagle. Two phases of aerial surveys to assess golden eagle occupancy and productivity were conducted within a ten-mile buffer of the Study Area in 2010 by the Wildlife Research Institute. Golden eagle point counts and ground-based nest monitoring were conducted in 2011 by Ironwood Consulting. Direct observations of golden eagles were recorded in vicinities of the Clark Mountains and the Umberci Mine. None of the territories identified in the aerial surveys were found to be engaged or successful in producing young in the 2010 breeding season. The lack of successful breeding may be attributed to natural annual variation due to high energy and time demands. Also, prolonged drought conditions may have had an adverse effect on golden eagle reproduction efforts. A standard five-mile buffer was applied to each active nest to model the estimated territory size and potential foraging area. Based on the standard territory size, one territory located near the Umberci Mine was estimated to partially overlap the Project site. This territory was the subject of further ground-based surveys in 2011.

Table 2-7 Desert Tortoise Estimates

	Quantity		
Desert Tortoise Sign	**Study Area**	**Alternative B**	**Alternative B1**
Live Tortoises[1] Observed	33	12	9[2]
Estimated Number of Tortoises[3]	69	30	23
Lower 95% Confidence Interval[1]	27	11	5
Upper 95% Confidence Interval[1]	180	82	64
Good-Excellent Burrows/Pallets	234	66	61
Other Burrows/Pallets	159	25	47
[1] Includes only adult tortoises >160mm mean carapace length [2] Includes two tortoises relocated from ISEGS fence line [3] Based on USFWS formula from 2010 protocol			

The spring 2011 golden eagle point count surveys revealed a pair of golden eagles located in the northern extent of the Study Area. The pair was observed exhibiting aerial displays and undulating flight at an altitude of 150 meters above the ground. Ground-based nest monitoring of the Umberci Mine territory conducted in April 2011 revealed one active, reproductive nest located approximately two miles northwest of the Project site. One chick approximately one month old was observed on April 23 and 26, 2011. Surveys of the next proximate territory within the Keany Pass region (approximately five miles west of the Project site) revealed nest sites that were occupied by red-tailed hawks incubating up to three chicks. The presence of red-tailed hawk nests may indicate that these nest sites were not used by golden eagles in 2011. Incidental observations of individual golden eagles were recorded in the vicinity of Metamorphic Hill during the winter/spring of 2011.

Other species observed in the mountain ranges surrounding the Project site during the golden eagle surveys included American kestrel (*Falco sparverius*), Nelson's bighorn sheep (*Ovis Canadensis nelsoni*), bobcat (*Lynx rufus*), common raven (*Corvus corax*), great horned owl (*Bubo virginianus*), mule deer (*Odocoileus hemionus*), peregrine falcon (*Falco peregrine*), prairie falcon (*Falco mexicanus*), red-tailed hawk (*Buteo jamaicensis*), and wild burro (*Equus africanus assinus*).

Other Special Status Wildlife Species. Other special status wildlife species observed during the tortoise and golden eagle surveys included bighorn sheep, prairie falcon, peregrine falcon, loggerhead shrike (*Lanius ludovicianus*), burrowing owl (*Athene cunicularia*) and LeConte's thrasher (*Toxostoma lecontei*). Of these special status wildlife species, the loggerhead shrike, burrowing owl and LeConte's thrasher are likely to use the Project site for nesting and foraging; however, none of these species were observed in great numbers. Nesting habitat for prairie falcon does not exist within the Study Area; the nearest possible nesting habitat may exist within the northern region of the Clark Mountains and Stateline Hills located north and west of the Study Area. Two other species that were not directly observed but have a potential of occurring within the Project site include American badger (*Taxidea taxus*) and Banded gila monster (*Heloderma suspectum cinctum*). Nelson's bighorn sheep have been documented within the Clark Mountains and Stateline Hills north and west of the Project site. It is expected that bighorn sheep rarely use the lower elevations of the Ivanpah Valley. Although Ivanpah Dry Lake supports a seasonal supply of water, it is not likely that sheep would use the lower basin area of the Ivanpah Valley near the lakebed,

therefore crossing the Study Area (personal communication Wehausen 2008). Metamorphic Hill contains steep rocky terrain and may attract sheep lower into the Ivanpah Valley; however, this habitat is relatively isolated from other portions of the Clark Mountain range.

Bat Species. An initial assessment for bat species was performed by Patricia Brown, Ph.D. (Brown-Berry Biological Consulting) in 2010 to assess potential bat habitat within the full Study Area. Acoustic monitoring was conducted in 2010 and 2011 to determine which bat species utilize the Study Area. Roost surveys were conducted of rock shelters and mines in the mountains adjacent to the project area during the day and at night for evidence of bats and guano. Census surveys and monitoring were performed at the Umberci Mine (located approximately two miles northwest of the Study Area).

Eight bat species were detected within or near the Study Area and nine species have the potential to occur. Four of the detected species are State Species of Special Concern including pallid bat (*Antrozous pallidus*), Townsend's big-eared bat (*Plecotus townsendii*), small-footed myotis (*Myotis ciliolabrum*), and Yuma myotis (*Myotis yumanensis*). Canyon bats (*Parastrellus hesperus*), California myotis (*Myotis californicus*), and Mexican free-tailed bats (*Tadarida brasiliensis*) were the most common species detected during echolocation surveys. The rocky hills immediately adjacent to the Project Study Area (e.g., Stateline Hills, Metamorphic Hills, and Clark Mountains) provide ample crevice roosting habitat for several bat species. A documented maternity colony and hibernation site for Townsend's big-eared bats occurs at the Umberci Mine in the Clark Mountain Range about two miles northwest of the Study Area. Guano of pallid bats was found in a shallow rock cave in the foothills just north of the Study Area. The guano was probably deposited by bats night roosting between foraging bouts. A mine shaft was located below the cave. Pallid bats have been found to roost in rock crevices during the day and congregate for socialization in boulder caves and mines during the night. Pallid bats, western pipistrelles, and small-footed myotis have a potential to roost within small rock crevices on the ground within the northern and westernmost sections of the Study Area.

Special Status Plant Species. During the preliminary review, a list of target species was derived from referencing the BLM NEMO Plan, California Natural Diversity Data Base, California Native Plant Society's (CNPS) Electronic Inventory, and personal communication with the BLM Needles Field Office. Twenty-two special status species were reviewed for their potential to occur within the Study Area. These species are not Federal- or State-listed (endangered or threatened), but are considered special status by the CNPS. All survey periods were scheduled to coincide with the primary blooming period for targeted special status species. Three surveys efforts were performed separately in 2008, 2010, and 2011, with the majority of the Study Area surveyed in 2010. The initial surveys in spring and fall of 2008 were conducted following the intuitive controlled survey method, which is suitable for large areas and highly skilled investigators, as described in *Survey Protocols Required for NEPA/ESA Compliance for BLM Special Status Plant Species* (BLM 2009). The second and third survey efforts were performed in spring of 2010 and spring of 2011 to provide full coverage of the Study Area consistent with *Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Natural Communities* (CDFG 2009) and *Guidelines for Conducting and Reporting Botanical Inventories for Federally Listed, Proposed and Candidate Plants* (USFWS 2000). The primary objective of the surveys was to identify all plant species within the Study Area to the taxonomic level (i.e., species, subspecies, or variety) necessary to determine rarity status. The surveys identified eight special status plants within the Study Area. GIS was used to provide quantitative estimates of special status plants potentially affected by the Project. The locations of special status plants were overlaid with the site layout footprints and estimates were generated for each alternative (Table 2-8).

Table 2-8 Special Status Plant Estimates

Species	Number of Individuals	
	Alternative B	**Alternative B1**
Mojave milkweed (*Asclepias nyctaginifolia*)	90+	<10
Small-flowered androstephium (*Androstephium breviflorum*)	70+	70+
Parish's club-cholla (*Grusonia parishi*)	15+	<10
Desert pincushion (*Coryphantha chlorantha*)	<10	0
Utah vine milkweed (*Cynanchum utahense*)	<10	<10
Rusby's desert mallow (*Sphaeralcea rusbyi* var. *eremicola*)	<10	0

Two other species were recorded outside the Project alternatives: viviparous foxtail cactus (*Coryphantha vivipara* var. *rosea*, CNPS List 2.2) and nine-awned pappusgrass (*Enneapogon desvauxii*, CNPS List 2.2). These species were recorded within the northwest quarter of Section 15, northern quadrant of Section 14, and throughout Section 12. More than 190 species of plants were identified during the surveys. No Federal- or State-listed (endangered or threatened) species were observed.

Sensitive Habitats. The Project site is not located within the boundaries of an Area of Critical Environmental Concern (ACEC), Desert Wildlife Management Area (DWMA), Wilderness Area, or Critical Habitat Unit (CHU). The Project site is less than two miles west of the Ivanpah Valley DWMA/ACEC and approximately 3.5 miles northwest from the Ivanpah CHU. The Clark Mountain ACEC is located approximately 4 miles west of the Project Study Area. The BLM-designated Stateline Wilderness Area is located less than one mile northwest of the Project site. The Mesquite Wilderness Area is located immediately west of the Stateline Wilderness Area. The Mojave Wilderness Area is located approximately six miles west of the Project site. The Mojave National Preserve is located three miles west of the western boundary and six miles south of the southern boundary of the Project Study Area.

The Study Area does not appear to support a well-defined wildlife movement corridor. Interstate 15 and Ivanpah Dry Lake to the east present an obstruction to large-scale east-west movement. Large mammal species including Nelson's big horn sheep, mountain lion, bobcat, and mule deer are expected to occupy steep, rugged terrain and boulder-strewn slopes for cover and protection. Most large mammal movement is expected to occur within and between the Clark Mountain Range and Stateline Hills, while not extending a substantial distance into the valley floor.

Two relatively large and definable washes are located within the southern extent of the Project Study Area. One wash accumulates along the west side of Metamorphic Hill where it supports mature riparian vegetation and sweeps around the southern end before fanning out onto the Project Study Area. The riparian vegetation does not continue onto the Study Area. The majority of the Project components avoid this wash; however, the Access Corridor and Transmission Corridor would cross the wash. The second large wash crosses the southern end of the Study Area and drains a higher area on the alluvial fan. This wash terminates near the Primm Valley Golf Course. The Study Area does not contain sensitive plant communities or wetlands; however, washes associated with CDFG Section 1600 jurisdiction area likely to occur within the Study Area.

2.2.6 Cultural and Paleontologic Resources

Cultural Resources

A Class I inventory was prepared for the Project Study Area. The Class I survey report is included as Appendix H-1 and is summarized below. A Class III survey has been conducted for the entirety of the Preferred Solar Farm Alternatives B and B1, Preferred Transmission Line, and Preferred Access Road; however, the report is not expected to be completed until fall 2011.

Class I Inventory.

Information Center Search. The Class I inventory began with an archaeological records search conducted at the San Bernardino Archaeological Information Center (SBAIC), located at the San Bernardino County Museum in Redlands, California on September 14, 2009. An updated record search was conducted on April 19 and 21, 2011. The SBAIC is part of the California Historical Resources Information System and is the official repository for all cultural resources site records and reports for San Bernardino County. The SBAIC records search identified previous surveys that have been conducted within a 1-mile radius of the Project Study Area, as well as cultural resources that have been previously recorded within 1 mile of the Project Study Area. The Project Study Area and the 1-mile buffer around the Project Study Area are collectively referred to as the records search radius. In addition, historic maps of the area were reviewed to determine if any structures or features were located within the area in historic times. The Historic Property Data File was also reviewed to identify any properties that have been listed on or determined eligible for listing on the National Register of Historic Places (NRHP), California Register of Historical Resources (CRHR), California Points of Historical Interest, California Landmarks, and National Historic Landmarks within 1 mile of the Project Study Area.

Previous Surveys. The results of the records search indicate that, between 1960 and 2008, 36 cultural resources investigations were conducted within the records search radius. Of these studies, 24 overlapped, crossed, or took place within the boundaries of the Project Study Area. Details of the previous studies are presented in Appendix H-1.

Known Sites. The records search results also show that 34 cultural resources have been previously recorded within the records search radius. These consist of 11 prehistoric archaeological sites, 1 prehistoric isolated find, 1 multi-component archaeological site, 5 historic-period refuse scatters, 6 historic-period road segments, 2 historic-period power line corridors, 1 historic-period state boundary line, 1 historic-period survey marker, 2 historic-period structures and 4 historic-period isolated finds. Details of all 34 previously recorded cultural resources are presented in Appendix H-1.

Of the 34 known resources, 13 cross or lie within the Project Study Area. These include the two historic-period power line corridors (Boulder Transmission Line, P36-07694/NRHP-E-94-001; and Hoover Dam to San Bernardino Transmission Line, P36-10315/NRHP-E-93-007), both cross the project study area and have been determined eligible for listing on the National Register of Historic-period Places (NRHP). The remaining 11 resources within the project study area include the historic-period Arrowhead Trail Highway (P36-07689), segments of 2 historic-period roads/telephone lines (P36-013416 and P36-013417), 1 historic period USGS survey marker (P36-014501), 1 prehistoric ceramic scatter (P36-63192), 2 historic-period refuse deposits (P36-63200, P36-023115), 1 isolated ceramic insulator (P36-014499), 3 isolated historic-period cans (P36-014500, P36-63199 and P36-63201).

Historic Map Review. The review of historic maps included examination of the U. S. Geological Survey (USGS) 15-minute Roach Lake, California topographic quadrangle map from 1955. No other historic maps covering the Project Study Area were on file at the SBAIC. The 1955 USGS map shows the two historic power line corridors (Boulder Transmission Line and Hoover Dam to San Bernardino Transmission Line) crossing the northern and southern portions of the project study area. The Arrowhead Trail Highway is also shown as a dirt road along the eastern edge of the project study area and a second dirt road is shown traversing the southern portion of the Project Study Area. The map does not indicate any other man-made features within the Project Study Area.

Survey Coverage Summary. The records search indicates that approximately 29 percent (about 1,920 acres) of the 6,487-acre Project Study Area has been previously surveyed for cultural resources, and only 1.3 percent (about 85 acres) has been surveyed within the last 10 years. It is general practice that cultural resource surveys are considered valid for a period of no more than 10 years. Three recent surveys have been conducted within the Project Study Area within this timeframe. These surveys include two overlapping linear surveys (NADB 1066134 and 1066336) just south of the Boulder Transmission Line that were conducted in 2001 and 2002. Together, they covered 25 acres along the northern portion of the Project Study Area. A third linear survey (NADB 1066300) was conducted along a dirt road on the eastern edge of the Project Study Area. This survey was completed in 2007 and covered approximately 60 acres of the Project Study Area. None of the previous surveys conducted in the last 10 years fall within the Solar Farm or the Gen-Tie Corridor. However, one survey (NAD1066330) overlaps a portion of the proposed Access Road.

BLM Coordination. In addition to the records search conducted with the SBAIC, ECORP contacted the BLM Archaeologist in the Needles Field Office to determine if the BLM had any additional information regarding cultural resources within and near the project study area. The BLM Archaeologist verified that there were no additional resources beyond what was identified in the records search results from the Information Center, but was able to provide some clarification on the location of two resources in and near the Project Study Area.

In addition, the BLM provided copies of two historic maps of Township 17 North, Range 14 East that encompass the Project Study Area and that were not available at the Information Center. Those maps were both created by the U.S. Department of the Interior, General Land Office (GLO) and are dated 1885 (published in 1907) and 1933. The 1885 map shows two roads crossing the southern boundary of the Project Study Area through Sections 25, 26, and 35. These roads do not appear on the 1933 map; however, that map indicates that most of the Township except the northeastern part were not resurveyed and were based on an 1884 survey. The 1933 map does show one road extending partially into Section 12 at the northern end of the Project Study Area and one telephone line crossing the southeastern corner of Section 12. No man-made features area indicated within the Project Study Area on either map.

Native American Heritage Commission Search. A search of the Sacred Lands File was requested from the Native American Heritage Commission (NAHC) in Sacramento to determine if there are any known resources of traditional, religious, or historical importance to local Native American groups. The results of that search did not indicate the presence of any known Native American resources within 0.5 mile of the project study area. It did, however, indicate the presence of numerous Native American cultural resources in the vicinity, but greater than 0.5 mile away from the project study area boundaries. No information was provided on the location or type of those resources. The NAHC provided a list of nine Native American groups and representatives with traditional and historical ties to the project area who

should be contacted for information about resources of religious and cultural significance to the tribes that could be affected by the development of the proposed solar farm.

Class III Cultural Resources Survey Summary. An intensive pedestrian survey was conducted by ECORP archaeologists between April 26 and May 14, 2010, between August 9 and August 11, 2010, between May 23 and June 16, 2011, and between August 3 and August 8, 2011. ECORP surveyed a total of 6,487 acres covering all of the Solar Farm Alternatives, Transmission Line Alternatives, Access Corridors considered from April 2009 until now, including buffer areas. This Project Study Area includes alternatives that are no longer under consideration.

In accordance with BLM requirements, all areas where activity would occur off of a paved road were surveyed. In addition, a buffer area was surveyed around the Preferred Solar Farm alternatives, Transmission Line Corridor, and Access Corridor. This buffer typically included at least 100 meters (330 feet) from the project component boundary. All areas were surveyed using transects spaced no more than 15 meters apart.

A total of 139 resources were identified in the Project Study Area, including 54 newly-recorded sites and 85 newly-recorded isolated finds. The newly recorded sites include 5 prehistoric sites, 45 historic-period sites, 3 multicomponent sites, and 1 possibly modern site. The five prehistoric sites consist of three lithic scatters and two seasonal campsites. The three multicomponent sites consist of one lithic scatter/historic-period refuse deposit and two prehistoric seasonal campsites containing historic-period refuse deposits. Of the 44 historic-period sites, 22 are historic-period refuse scatters, 3 are historic-period road segments, 1 is a possible historic-period wagon trail, 2 are mining sites, 5 are rock cairns, 3 are rock hearths, 4 are survey markers, 1 is a rock alignment, 1 is a fence line, 1 is a earthen holding pond, 1 is a telephone line, 1 is a glass insulator cache, and 1 consists of a rock hearth with a historic-period refuse scatter. The possibly modern site consists of a deflated rock cairn and a survey marker. The 85 isolated finds include 13 prehistoric artifacts and 72 historic-age artifacts such as cans, bottles, glass insulators, a metal wagon wheel tread, and a late 1930's Buick car.

A total of 22 sites fall within the Solar Farm Alternatives B and B1, the Access Corridor, and the Transmission Corridor. Fifteen sites fall within the Solar Farm Alternative B boundary. These include four can scatters, one collapsed cairn with milled lumber, one glass insulator cache, one mining site, three historic refuse scatters, one camp site, one rock cairn, one rock hearth, one telephone line and the possibly modern deflated rock cairn and survey maker. A total of 12 sites fall within the Solar Farm Alternative B1 Field Lay Down Area. Of these, five are located within both Alternative B and Alternative B1. The four sites that fall exclusively within Alternative B1 consist of one historic-period refuse scatter, one historic-period refuse scatter and holding pond, one historic-period two track road, and one historic period fence line. One site, a can scatter, falls within the Transmission Line Corridor, and two sites, a 1955 road and a segment of a possible 1885 Wagon Trail (both originally identified from historic maps), cross both the Transmission Corridor and Access Corridor.

Of the 87 isolates found within the Project Study Area, 24 fall within the Solar Farm Alternatives B and B1, the Access Corridor and the Transmission Corridor. Of these 24 isolated finds, 13 consist of 1 or 2 cans, 5 consist of glass insulators, 2 consist of glass bottles, 2 consist of prehistoric flakes, and 2 consist of prehistoric manos. A total of 13 previously recorded resources fall within the Project Study Area. Of these, five resources cross or lie within the Solar Farm Alternatives B and B1, the Access Corridor and the Transmission Corridor. Of these five, the Hoover Dam to San Bernardino Transmission Line (CA-

SBR-010315/NRHP-E-93-007), which crosses the Access Corridor and runs the length of the Transmission Corridor, has been determined eligible for listing on the NRHP. Of the remaining five resources, three resources, the historic-age Arrowhead Trail Highway (P36-07689), a survey marker (P36-014501), and an isolated can (P36-014500) cross the eastern portion of Alternative B1. One can scatter (P36-063200) falls within the Transmission Corridor. An attempt was made to locate the 13 previously-recorded sites and isolates located within the Project Study Area (CA-SBR-10315H/NRHP-E-93-007; CA-SBR-7694H/NRHP-E-94-001; CA-SBR-7689H; P36-63192; P36-063199; P36-014500; P36-014501; CA-SBR-14543H; P36-014499, P36-063200; P36-063201; CA-SBR-12574H; and CA-SBR-012575H). ECORP archaeologists resurveyed the previously reported location of these sites to assess any changes including man-made or naturally occurring disturbance and/or damage.

ECORP archaeologists were only able to locate 7 of the 13 previously recorded resources despite the use of the GPS and/or previously recorded UTM coordinates and additional survey at reduced intervals. The seven sites that were located are CA-SBR-10315H/NRHP-E-93-007, the NRHP-eligible Hoover Dam to San Bernardino Transmission Line; CA-SBR-7694H/NRHP-E-94-001, the NRHP-eligible Boulder Dam-Los Angeles 287.5 kV Transmission Line; a segment of the Arrowhead Trail (CA-SBR-7698H); a road and telephone line (CA-SBR-12574H); a U.S. Coast & Geodetic Survey Benchmark marker (P36-014501); a historic-period refuse deposit (CA-SBR-14543H); and an isolated hole-in-cap can (P36-014500). Sites and isolates that were not located have likely been subjected to wind and water erosion, including the dispersal of items by high winds and seasonal flooding known to occur throughout the area. The six resources ECORP archaeologists were unable to locate include a prehistoric ceramic concentration (P36-063192), a historic-period can scatter (P36-063200), a road and telephone line (CA-SBR-12575H), an isolated ceramic insulator (P36-014499), and two isolated cans (P36-063199 and P36-063201).

Summary and Recommendations. The Class I report provided information on known cultural resources located within and near the Project Study Area based on available data from SBAIC, BLM, and NAHC. It provided baseline information to guide the next phase of cultural resources studies for the project. Because only approximately 1.3 percent of the various solar farm alternatives have been surveyed for cultural resources in the last 10 years, field survey of the entire footprint was recommended and completed.

As a result of the Class I inventory, 13 previously recorded archaeological resources were identified within the Survey Area and 5 fell within the Preferred Project Components. In addition, two historic-period roads and a historic-period telephone line were identified from historic maps and were recorded during the Class III Survey.

As a result of the Class III Survey, 54 new sites and 85 isolates were recorded within the entire Survey Area. A total of 21 newly-recorded sites, 5 previously-recorded sites, and 24 isolated finds are located within the Solar Farm Alternatives B, and B1, the Access Corridor and the Transmission Corridor. Isolated finds are not considered eligible for inclusion in the NRHP, so impacts to the 24 isolated finds would not be significant. The significance of impacts to the 26 sites would have to be assessed during the next phase of the cultural resources study.

Although no Native American resources were identified in the study area by the NAHC, consultation with the Native American contacts provided by the NAHC is in progress by BLM to identify any resources of religious and cultural significance to the tribes that could be affected by the proposed project.

Paleontologic Resources

A Paleontology Literature and Records Review were conducted at the Division of Geological Sciences at the San Bernardino County Museum on October 6, 2009 (Appendix I). Mapping review by Museum staff could not determine if the Project Study Area is on a lithologic unit that had high paleontologic sensitivity, although similar sediments in the vicinity of the Project Study Area have yielded fossil resources. For example, large mammal bone fragments have been recovered near the northern end of Ivanpah Dry Lake. One location of fossil remains of an indeterminate rodent was recorded in the southeastern portion of the Project Study Area. Additionally, three other paleontological resource localities have been recorded within one mile of the Project Study Area. The Museum did not recommend survey of the project site and recommended monitoring for excavations below five feet in depth. The BLM has concurred with this recommendation.

2.2.7 Project Location, Land Ownership, and Jurisdiction

As described above, the Project is located in eastern San Bernardino County, approximately 2 miles south of the California-Nevada border and 0.5 mile west of the I-15 freeway (Appendix A). The Solar Farm, Transmission Corridor, and Access Corridor sites are located entirely on vacant, Federal land managed by the BLM Needles Field Office.

2.2.8 Legal Description

The legal description of the Project Study Area includes the public land administered by the BLM that includes land within the San Bernardino Base and Meridian (SBB&M) as detailed in Tables 2-9 and 2-10, below. Table 2-9 provides legal descriptions of the area within the Project Study Area considered for the Proposed Solar Farm and Access Corridor and Table 2-10 provides legal descriptions of the area considered for the Transmission Corridor.

Table 2-9 Legal Description of the Proposed Solar Farm and Access Corridor Project Study Area

Township Range and Section	
T 17N, R 14E	
Section 13	W ½ SE ¼
Section 14	All
Section 15	All
Section 22	All
Section 23	All
Section 24	W ½ NE ¼, SE ¼, W ½ SE ¼, NE ¼, NW ¼
Section 25	W ½
Section 26	All

Section 34	SE ¼, SE ¼, SE ¼
Section 35	All
T 16N, R 14E	
Section 1	NW ¼ , W ½ SW ¼ , W ½
Section 2	NW ¼, N ½ NE ¼ , N ½ NE ¼ , SE ¼ NE ¼, SW¼, E ½ SE ¼, E ½ SE ¼ , NW ¼ , E ½ SE ¼ , SW ¼ , E ½
Section 3	NE ¼, NE ¼
Section 11	NE ¼, NE ¼ NE ¼, NW ¼, E ½
Section 12	NW ¼, NW ¼, W ½

Additionally, the Project planning area includes a 200-foot wide linear transmission line route that will parallel along the north side of the current location of the 115 kV SCE transmission line through the following sections of Federal Lands:

Township, Range and Section	
T 17N, R 14E	
Section 34	E ½ and SW ¼
T 16N, R 14E	
Section 3	NW ¼

The Ownership Map, Appendix A, depicts the Proposed Solar Farm boundaries and ROW for the gen-tie Transmission Corridor and Access Corridor. As indicated previously, the proposed SCE Ivanpah Substation is expected to be the interconnection point for the Project and would be located within the Transmission Corridor. As described in the Project Description, Section 2.0, the proposed Transmission Corridor will extend southwest approximately 2.3 miles from the southwest corner of the Proposed Solar Farm to SCE's Ivanpah Substation and the proposed Access Corridor will extend southeast for approximately 1.7 miles to Yates Well Road. The assessor's parcel numbers for the parcels included within the Proposed Solar Farm, Transmission Corridor, and Access Corridor are depicted on the Ownership Map.

Table 2-10 Legal Description of the Proposed Transmission Corridor Study Area	
T 17N, R 14E	
Section 34	That portion of land within a 400-foot wide area traveling south by southwest through the Section.
T 16N, R 14E	
Section 3	That portion of land within a 400-foot wide area traveling south by southwest through the Section.

2.2.9 Power Plant Facilities

The Stateline Solar Farm Project involves the installation of First Solar PV modules with the capacity to generate a total of 300 MWac of power under peak solar conditions. First Solar has an active Research and Development program that seeks to increase PV module efficiency and design new more efficient ways to install the PV modules and reduce the foot-print of installed energy on a per acre basis. This POD is based on current technology and installation methodology.

2.2.10 First Solar Cadmium Telluride (CdTe) PV Technology

The principal materials incorporated into the PV arrays include glass, steel, and various semiconductor metals. First Solar's production process is designed to minimize waste generation and maximize the recyclability and reusability of component materials. At the end of their useful life, all of the Project materials will be removed from the site and many will be fully recycled, including the steel tables and posts, wiring, and PV modules themselves, which will be collected through First Solar's pre-funded module collection and recycling program.

The First Solar modules used in the Project employ the compound CdTe as the semiconductor material. The unique advantages of CdTe PV technology include:

- Superior light absorption properties, compared to traditional silicon modules, resulting in higher output under cloudy and diffuse light conditions such as dawn and dusk;[9]
- Better performance at the high temperatures that modules are subject to under direct sunlight compared to traditional silicon modules;[10]
- Enhanced suitability for production of modules – high volume and low cost;
- Effective sequestration of cadmium in a stable compound between two protective sheets of glass for the lifetime of the module; and
- The smallest carbon footprint and fastest energy payback time of all existing PV technologies.[11]

9. Mohring, H.D., et al., "Outdoor Performance of Polycrystalline Thin Film PV Modules in Different European Climates," European project 'PYTHAGORAS."

10. Ibid.

Cadmium telluride is a stable compound of cadmium (Cd) and tellurium (Te). Although Cd as an independent element is a human carcinogen, it is produced primarily as a byproduct of zinc refining, and is compounded with Te, a byproduct of copper refining, to form the stable compound CdTe. In module manufacturing, First Solar effectively takes a hazardous material, Cd, and safely sequesters it in the form of CdTe in a module for the over 25-year lifetime of the module, after which it is recycled for use in new solar modules. In addition, CdTe's physical properties, including its extremely low vapor pressure and high boiling and melting points, along with its insolubility in water, limit its mobility. Furthermore, the very thin layer of CdTe in PV modules is encapsulated between two protective sheets of glass. As a result, the risk of health or environmental exposure in fires, from accidental breakage, or from leaching is *de minimus*. The exposure routes to CdTe in modules are limited; furthermore, recent toxicological testing indicates that CdTe is significantly less toxic than elemental Cd. First Solar's industry-leading recycling program ensures that PV materials stay in the production cycle and out of municipal landfills. First Solar has commercial-scale recycling operations in place at all of its manufacturing facilities. Approximately 95 percent of the semiconductor material and 90 percent of the glass are recovered in First Solar's recycling program. The remaining materials (*e.g.* fine glass particles, dust) become broken glass or dust that are collected in HEPA filters and are disposed of properly.

In 2009, an in-depth assessment of the environmental, health and safety aspects of First Solar's CdTe PV systems and manufacturing operations was carried out under the authority of the French Ministry of Ecology, Energy, Sustainable Development, and the Sea. It concluded that, "During standard operation of CdTe PV systems, there are no cadmium emissions – to air, to water, or to soil. In the exceptional case of accidental fires or broken panels, scientific studies show that cadmium emissions remain negligible. Accordingly, large-scale deployment of CdTe PV can be considered safe to human health and the environment."[12]

A 2005 peer review of three major published studies on the environmental profile of CdTe PV organized by the European Commission, Joint Research Center and sponsored by the German Environment Ministry concluded "…CdTe used in PV is in an environmentally stable form that does not leak into the environment during normal use or foreseeable accidents, and therefore can be considered the environmentally safest current use of cadmium." This review also concluded that "…Large scale use of CdTe photovoltaic modules does not present any risks to public health and the environment."[13] Independent analysis also indicates that CdTe modules do not pose a risk during fires. CdTe has an extremely low vapor pressure, high boiling and melting points and is almost completely encapsulated by molten glass when exposed to fire. Exposure of pieces of CdTe PV modules to flame temperatures from

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11. de Wild-Scholten, M., 'Solar as an environmental product: Thin-film modules – production processes and their environmental assessment,' presented at the Thin Film Industry Forum, Berlin, April, 2009.Fthenakis, V. M, Alsema, E., "Photovoltaics Energy Payback Times, Greenhouse Gas Emissions and External Costs: 2004 –Early 2005 status," Progress in Photovoltaics: Research and Applications, 2006; 14: 275-280.

12. Summary Report, "Environmental, Health, and Safety (EHS) Aspects of First Solar Cadmium Telluride (CdTe) Photovoltaic (PV) Systems," carried out under the authority of the French Ministry of Ecology, Energy, Sustainable Development, and the Sea, July 2009.

13. Summary Report, "Peer Review of Major Published Studies on the Environmental Profile of Cadmium Telluride (CdTe) Photovoltaic (PV) Systems," European Commission, Joint Research Centre

1,400°F to 2,000°F illustrated that CdTe diffuses into glass, rather than being released into the atmosphere. Higher temperatures produce further CdTe diffusion into the glass. "[14]

Through outdoor leaching experiments with small fragments of CdTe modules, an independent study estimated that in a worst-case scenario, materials leached from the modules into water would result in concentration levels that are below the U.S. Environmental Protection Agency's (USEPA) drinking water concentration limit for cadmium. [15]

2.2.11 PV Arrays and Combining Switchgear

PV modules will be mounted in tables that will connect, via angled brackets, to steel columns which will be driven into the ground. These assemblies will be organized into arrays (Figure 2-1); placement of arrays within the Solar Facility Site will be based on constraints including topography and biological considerations.

The PV modules are electrically connected by wire harnesses and combiner boxes that collect power from several rows of modules and feed the Project's Power Conversion System (PCS) (Figure 2-2) via underground DC cables. Inverter hardware will be located in each PCS, which will convert the DC electric input into grid-quality AC electric output. A transformer will then step up the voltage of the array for on-site transmission of the power via underground lines to the PV combining switchgear (PVCS), then via overhead lines to the on-site Project Substation where the voltage is stepped up to 220 kV and routed to the Ivanpah Substation.

Appendix A, Power Conversion Station, contains the details of the PCS and transformer unit. Appendix A, AC Electrical Collection System, provides details relative to the collection of AC power and delivery to the on-site Project Substation.

The PVCS (Figure 2-3) collects the power from a group of arrays for transmission to the on-site Project Substation. The PVCS cabinets are dispersed among the arrays. High-capacity collection system lines then connect the power output from the PVCS to the Project Substation via overhead circuits, as demonstrated on Appendix A. The approximate locations of the PVCS cabinets are depicted on Appendix A. These overhead lines will be supported by wooden poles. The on-site electrical collection system is designed to minimize electrical losses within the Proposed Solar Farm prior to delivery to the on-site Project Substation.

The Project Substation facility will be a located in a 2.5-acre area centrally located within both Alternatives B and B1 layouts north of the existing transmission lines. At the Project Substation, the voltage of the Solar Farm-generated electricity is stepped up to 220 kV, which is the voltage of the gen-tie line that will interconnect Project output with the SCE regional transmission grid at the future Ivanpah Substation.

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14. Fthenakis, V., Fuhrmann, M., Heiser, J., Lanzirotti, A., Fitts, J., and Wang, W.,""Emissions and Encapsulation of Cadmium in CdTe PV Modules During Fires," *Progress in Photovoltaics: Research and Applications*, 6, 99-103 (1998).

15. Steinberger, H., "Health, Safety and Environmental Risks from the Operation of CdTe and CIS Thin-Film Modules," *Progress in Photovoltaics: Research and Applications*, 6, 99-103 (1998).

Figure 2-1 Representative PV Array Photograph

Figure 2-2 Representative Power Conversion Station Photograph

Figure 2-3 Representative PV Combining Switchgear Photograph

2.2.12 Monitoring and Maintenance Facility

The Monitoring and Maintenance (M&M) facility, located adjacent to the on-site Project Substation, is designed for parts storage, plant security systems, and Project monitoring equipment. The M&M facility consists of offices, a restroom, and a storage area. The M&M facility will likely consist of a 45-foot wide by 67-foot long prefabricated building set on concrete slab-on-grade. The building will be approximately 19 feet tall at its highest point. A septic system and leach field will serve the Project's sanitary wastewater treatment needs and has been sited south of the M&M facility. Appendix A provides an overview of the M&M facility.

2.2.13 Meteorological Station

One or more meteorological stations will be installed prior to construction in order to track weather patterns. Figure 2-4 depicts typical meteorological station. The meteorological station(s) will be attached to the data acquisition system (DAS) to collect data for analysis and system monitoring. The DAS involves a network of data loggers and programmable logic controllers at each PCS enclosure. These will, in turn, be connected to a Wide Area Network and monitored on site in the M&M facility, as well as in a remote Network Operations Center.

2.2.14 Other Ancillary Facilities

In addition to the M&M facility the Project includes another ancillary facility, a guard shack. The guard shack will be constructed at the entrance to the Proposed Solar Farm for use by security personnel during Project construction and operations phases. It is expected that the guard shack will be manned 24 hours a day throughout the life of the Project.

Figure 2-4 Representative Meteorological Station Photograph

2.2.15 Site Security and Fencing

The Proposed Solar Farm will be fenced to facilitate Project and equipment security, and, as noted above, there will be at least one 24-hour security guard located on the site during construction and operation. Surveillance methods such as security cameras, motion detectors, or heat sensors may be installed at locations along the Project boundary. Gates will be installed at the roads entering or exiting the Proposed Solar Farm. Limiting access to the Project will be necessary both to ensure the safety of the public and to protect the equipment from potential theft and vandalism. The perimeter of the Proposed Solar Farm will be fenced with an approximately six-foot tall chain-link fence topped with barbed wire for security purposes. In addition, six-foot chain-link fencing will surround the Project's on-site substation, switching station, M&M facility, and the temporary construction staging areas. The perimeter fence will include tortoise exclusion fencing as appropriate to project mitigation measures, to prevent desert tortoises from entering the Proposed Solar Farm. A detailed Preliminary Fence Plan is provided as Appendix A.

Shielded area-specific lighting for security purposes will be limited to the M&M facility, the Project Substation, the temporary construction staging areas, and possibly on or near each PCS station. The level and intensity of lighting will be the minimum needed for security and safety reasons. These lights will be turned on either by a local switch, as needed, or by motion sensors that will be triggered by movement at a human's height during maintenance or emergency activities. There will be no lights around the Project

perimeter in order to minimize the Project's visual impact on surrounding receptors and roads. Sensors on the security fencing will alert security personnel of possible intruders. Exterior lights at the M&M facility, Project Substation, temporary construction areas, and at the PCS stations will be shielded and focused downward and toward the interior of the site to minimize lighting impacts to the night sky and to neighboring areas.

2.2.16 Temporary Construction Facilities

Included within the Proposed Solar Farm for Alternatives B and B1 will be five temporary construction staging areas totaling approximately 30 acres and approximately 7 acres for temporary construction offices and parking (Appendix A). Temporary construction fencing will surround this area. These areas will be used throughout the approximately 2-4 year Project construction period and then decommissioned.

Graded all-weather roads will be required in selected locations on the Proposed Solar Farm during construction to bring equipment and materials from the staging areas to the construction work areas. These roads will not be decommissioned after construction, but will be used for long-term Project operation and maintenance. Approximately 149.5 acres (Alternative B) and 179 acres (Alternative B1) will be used for internal and external access roads. Appendix A (Alternative B) and Appendix B (Alternative B1) show the planned 25-foot wide gravel access roads. Also see POD Section 3.0, Construction of Facilities.

2.2.17 Acreage and Dimensions of Project Facilities and Components

The Project Study Area covers approximately 5,500 acres, including 5,454 acres studied for the Proposed Solar Farm and 64 acres studied for a transmission corridor. Of that total, only approximately 2,114 acres would be used for the Alternative B (including the Access Corridor) and 38 acres will be used for the Transmission Corridor. Table 2-11a provides a list of major Project components along with the required acreage. In addition to the PV areas and conversion equipment, which take up the vast majority of the Project acreage, the largest permanent land uses on the Proposed Solar Farm are access roads, the M&M facility, and the on-site substation.

As also shown on Table 2-11a, of the total Alternative B footprint of 2,153 acres (including 2,114 acres for the Proposed Solar Farm and Access Corridor and 38 acres for the Transmission Corridor), grading will occur on approximately 1,846 acres (86%). Approximately 0.2 percent of the total footprint will be covered with at-grade facilities (*e.g.*, M&M facility, on-site Project Substation), and approximately 70.3 percent of the Proposed Solar Farm will be covered or shaded by solar modules. Please see text in previous subsections and Appendix A for details about the Project elements shown in Table 2-11a below.

Of that total Project Study Area of approximately 5,500 acres, only approximately 1,900 acres would be used for the Alternative B1 (including the Access Corridor) and 49 acres will be used for the Transmission Corridor. Table 2-11b provides a list of major Project components for Alternative B1 along with the acreage they will require. In addition to the PV areas and conversion equipment, which take up the vast majority of the Project acreage, the largest permanent land uses on the Proposed Solar Farm are access roads, the M&M facility, and the on-site substation.

Table 2-11a Approximate Size of Project Facilities and Components – Alternative B

Project Facility or Component	Number of Components within Project	Approx. Area (acres)	Percent of Total Preferred Project Site*
Transmission Corridor	One transmission line and associated transmission towers	38.0	1.8%
PV Arrays	NA	863.0	40.1%
On-site Project Substation	1	2.5	<0.1%
M&M facility	1	0.6	<0.1%
Temporary Construction Staging Areas	5	29.7	1.4%
Access Roads (Site Access Road and Internal Access Roads)	57.4 miles	149.5	6.9%
Graded Area Including Roads	NA	1,846.0	85.7%
Area Disturbed by Trenching	NA	23.5	1.1%
Area Covered by At-Grade Items (inverter pads, substation, M&M facility)	NA	4.1	0.2%
Area Covered/Shaded by Above-Grade Modules	NA	1,514.1	70.3%

* The Preferred Project Site area includes 1,846 acres for the Proposed Solar Farm and Access Corridor and 38 acres for the Transmission Corridor, totaling 1,884 acres.

NA = Not applicable.

As also shown on Table 2-11b, of the total Alternative B1 footprint of approximately 1,949 acres (including 1,900 acres for the Proposed Solar Farm and Access Corridor and 49 acres for the Transmission Corridor), grading will occur on approximately 1,919acres (74.7%). Approximately 0.2 percent of the total footprint will be covered with at-grade facilities (*e.g.*, M&M facility, on-site Project Substation), and approximately 32 percent of the Proposed Solar Farm will be covered or shaded by solar modules. Please see text in previous subsections and Appendix A for details about the Project elements shown in Table 2-11b below.

2.2.18 Geotechnical Studies

As was discussed above in Section 2.1.4, Geologic Conditions, a Phase I Geotechnical Report (Appendix E) was completed which found that the proposed development of the Proposed Solar Farm was considered feasible from a geotechnical standpoint. An additional geotechnical investigation is planned for completion in fall 2010 that will provide additional data to allow finalization of Solar Farm structural design, including required depth of piles that will be driven to support the PV modules.

Table 2-11b Approximate Size of Project Facilities and Components – Alternative B1

Project Facility or Component	Number of Components within Project	Approx. Area (acres)	Percent of Total Preferred Project Site*
Transmission Corridor	One transmission line and associated transmission towers	49	1.9%
PV Arrays	253	1,568	61.1%
On-site Project Substation	1	2	0.1%
M&M facility	1	3	0.1%
Temporary Construction Staging Areas	5	30	1.2%
Access Roads (Site Access Road and Internal Access Roads)	74 miles	179	7.0%
Graded Area Including Roads	NA	1,919	74.7%
Area Disturbed by Trenching	NA	24	0.9%
Area Covered by At-Grade Items (inverter pads, substation, M&M facility)	NA	6	0.2%
Area Covered/Shaded by Above-Grade Modules	NA	839	32.7%

* The Preferred Project Site area includes 1,900 acres for the Preferred Proposed Solar Farm and Access Corridor and 49 acres for the Transmission Corridor, totaling 1,949 acres.

NA = Not applicable.

2.2.19 Water Uses and Sources

The Project will use no water for electrical power generation. After completion of the construction phase of the Project, the only water use will be for domestic purposes (drinking, washing, toilets) in the M&M Facility. Water for the construction and operation of the Project would be drawn from a combination of up to two different wells within the Project Study Area operated by the Applicant upon receiving an approval for well construction from the County of San Bernardino. The wells will access water within the South Ivanpah Groundwater Basin.

During the approximately 2 to 4 year construction period, an estimated total of 1,900 acre-feet of water will be needed for such uses as soil compaction, dust control, and sanitary needs. The majority of the construction water use will occur during the site preparation period, which will take place during the first year of Project construction. The peak daily water demand is estimated at approximately 1.5 million gallons per day (gpd).

A temporary water storage facility will be used to store water during construction in order to meet expected daily demand. The water storage facility will be charged with/connected to the wells with existing or temporary piping. Water will be transferred directly to trucks from the storage facility as needed for construction.

During operations, one permanent, approximately 5,000-gallon, above-ground water storage tank will be installed adjacent to the M&M facility. Because of the Project's small operating workforce (7 full time equivalent workers), water demand will be approximately 20 ac-ft/yr or 300 gallons per day. The tank will also be sized to supply sufficient fire suppression water during operations. If needed, an on-site water treatment system (e.g., a package unit) may be installed to meet the Project operation's potable water needs.

As noted above, a groundwater availability analysis was completed for the proposed Project. This analysis reviewed past and recent studies, the existing groundwater budget, recharge sources and quantities, and existing and proposed extraction rates. The analysis concluded that the precipitation recharge and water-use returns exceed the current and expected future pumping, and therefore groundwater is available within the Ivanpah South portion of the Ivanpah Valley to adequately supply the propose Project's construction and operational life.

2.2.20 Erosion Control and Storm Water Drainage

As noted earlier, the Applicant has conducted a hydrology and hydraulics study to achieve the following objectives: 1) management of construction and post-construction storm water flows to achieve minimal impact in terms of hydrological conditions (erosion and sedimentation) on properties downstream of the Proposed Solar Farm; and 2) design of site structures for reliable, safe operation under the expected on-site drainage conditions. The Hydrology and Hydraulics Report is provided in Appendix G.

Based on the final hydrologic evaluation, First Solar will implement site design and protective erosion and drainage control design measures during construction and operation to achieve the above objectives. Appendix A, Proposed Erosion Control Plan and Proposed Erosion Control Plan Details, depict preliminary, proposed measures, including site design to promote sheet flow, debris basins, siltation basins, and silt fences. These and other protective measures (including avoiding the placement of PV module tables and piles within 100 feet of significant drainages and minimizing disturbance and compaction to the extent possible), will enable historic levels of runoff off site to be maintained at the Proposed Solar Farm and in downstream areas, including Ivanpah Dry Lake.

The Project may warrant coverage under the National Pollutant Discharge Elimination System (NPDES) General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities Order No. 2009-0009-DWQ. As part of expected obligations under the General Permit, the Applicant will prepare and implement a construction SWPPP prior to the commencement of soil disturbance activities associated with Project construction. The SWPPP will describe construction best management practices

(BMPs) to manage storm water on the site to both protect the site and to minimize downstream erosion and sedimentation.

Several erosion control measures are planned during construction including stabilization of the heavily used construction entrance area, employing a concrete wash out area, as needed, and tire washes near the entrance to existing roadways. Silt fences are proposed for erosion control along neighboring properties, Power Line Road and along the main drainage to the east of the Proposed Solar Farm. Appendix A, Preliminary Erosion Control Details, provides further detail for the Proposed Erosion Control Plan. The approximate percentage of the Proposed Solar Farm that will be covered with impervious surfaces (inverter foundations, M&M facility, etc.) will constitute a fraction of one percent of the total surface area of the Site. The final Site Plan will be based on a detailed topographic survey of the site, as well as detailed hydrologic and topographic studies that will be performed as a part of the permitting and engineering design process. No Federal Emergency Management Agency- (FEMA-) designated Flood zones exist within the vicinity of the Project; the Site and vicinity are classified by FEMA as Zone D – Not Studied. Additional information on grading and compaction techniques is presented in Section 3.6.

2.2.21 Vegetation Treatment and Weed Management

The Applicant is currently in the process of developing a plan for vegetation management at the Proposed Solar Farm. Several different options for vegetation management on the Proposed Solar Farm after construction are being considered. The Applicant plans to coordinate with the BLM, USFWS, CDFG, San Bernardino County, and the California Native Plant Society to determine the best methods and species to employ in the revegetation plan. Further details relative to this vegetation management plan will be provided during the NEPA process. An Integrated Weed Management Plan will also be developed and implemented to control invasive exotic weeds.

2.2.22 Waste and Hazardous Materials Management

The Stateline Solar Farm would generate minimal wastes during operation. There also would be limited hazardous materials stored or used on site as shown in the tables below. Appropriate spill containment and clean-up kits would be kept on site during construction and maintained during the operation of the Stateline Solar Farm. The primary chemicals/petroleum products expected to be present on the Project site during construction and operation are listed in Tables 2-12 and 2-13, respectively.

Table 2-12 Chemicals at Project Site during Construction

Product	Use
Diesel Fuel	Vehicles
Gasoline	Vehicles
Motor Oil	Vehicles
Hydraulic Fluids and Lube Oils	Vehicles and Equipment
Soil Stabilizers	Roads and PV Table Areas
Biodegradable Mineral Oil	Transformers

Table 2-13 Chemicals at Project Site during Operation

Product	Use
Diesel Fuel	Vehicles
Gasoline	Vehicles
Motor Oil	Vehicles
Biodegradable Mineral Oil	Transformers

First Solar PV modules and other products used during construction and operation of the Project are not hazardous and are not subject to California or Federal hazardous material management regulations. Electrical generating activities would not produce hazardous or other industrial waste.

During construction of the Project, the only wastes produced would be typical construction wastes, such as wood, concrete, and miscellaneous packaging materials. Construction wastes would be disposed of in accordance with local, State and Federal regulations. Any modules damaged or broken during construction are considered retrograde material and would be returned to First Solar's manufacturing facility in Ohio, where they would be recycled into new modules or other new products (see Section 2.2.23 below).

Portable toilets would be used during construction and waste will be regularly pumped out, hauled away, and disposed of by appropriately licensed organizations. An on-site septic system and leach field near the on-site M&M facility would be used to manage sanitary waste during Project operation. Because of the small operational work force, volumes of sanitary waste discharged to the septic system and leach field would be no more than a few hundred gallons per day during operation.

Permits for the septic system will be obtained from San Bernardino County, as needed. Soil percolation tests would be performed in order to demonstrate that an on-site septic system and leach field is feasible at the planned location. Additional testing may be performed in accordance with San Bernardino County test procedures prior to final leach field design. The specific location of the leach field and septic system may be adjusted based on the results of preliminary percolation tests.

2.2.23 Reusable and Recyclable Materials/PV Module Recycling

The Stateline Solar Farm facilities include numerous recyclable materials, including glass, semiconductor material, steel, and wiring. As the Project approaches the end of its useful life, the component parts would be dismantled and recycled. First Solar has a pre-funded recycling program for all of its solar modules as described in the following paragraphs.

First Solar, as manufacturer and supplier of the PV modules to the Project, is committed to the philosophy of extended product responsibility and to improving the global environment, and as such has established a Collection and Recycling Program to promote the collection and recycling of PV modules to minimize the potential for modules to be disposed of as municipal waste. The program enables substantially all components of the modules, including the glass and the encapsulated semiconductor material, to be collected and recycled into new modules or other products.

First Solar sets aside funds, at the time of module sale to meet estimated collection and recycling costs, including all packaging, transportation, and recycling costs. Some key elements of the First Solar recycling Program include:

- Funding: With the sale of each module, First Solar sets aside the funds required for the collection and recycling in a restricted account controlled by a third-party insurance company;
- Registration: The site location of each module installation is registered with First Solar;
- Notice: Individual modules are labeled with Web site and telephone contact information in six languages, along with instructions for the user to return the product free of charge;
- Collection: First Solar manages the logistics of collecting each module and provides packaging and transportation to the recycling center;
- Recycling: All recycling processes are monitored to ensure compliance with local regulations regarding health, safety, and waste management; and
- Improvement: Results of the program are audited for continuous improvement.

Managing the product lifecycle, from raw material sourcing through end-of-life collection and recycling, enables First Solar to create a perpetually sustainable cycle that strives to provide the most environmental benefits.

2.2.24 Fire Protection

There is limited potential for wildfire on the Project site. The Project is not located adjacent to either urbanized areas or wild lands. Vegetation is sparse and the facility footprint itself would be cleared, so that fire risk from vegetation will be minimized. The Project would coordinate with San Bernardino County to ensure that appropriate measures will be taken to control the risk of fire.

Project facilities would be designed, constructed, and operated in accordance with applicable fire protection and other environmental, health and safety requirements. Effective maintenance and monitoring programs are vital to productivity as well as to fire protection, environmental protection, and worker protection.

The Applicant will have a Project fire prevention plan in place for construction and operation. This plan will comply with applicable San Bernardino County regulations. During construction, the following steps will be taken to identify and control fires and similar emergencies:

- A network of roads will be constructed for adequate fire control and emergency vehicle access to the site.
- Electrical equipment that is part of the Stateline Solar Farm will only be energized after the necessary inspection and approval, so there is minimal risk of any electrical fire during construction.
- Project staff will monitor fire risks during construction and operation to ensure that prompt measures are taken to mitigate identified risks.
- Transformers located on site will be equipped with non-toxic, mineral-oil-based coolant that is non-flammable, biodegradable and contains no polychlorinated biphenyls or other toxic compounds.

2.2.25 Electrical Components, New Equipment, and Existing System Upgrades

In Alternative B, the project substation would be constructed in the southwestern portion of the Proposed Solar Farm (Appendix A). In Alternative B1, the project substation would be constructed in the

southeastern portion of the group of arrays north of the existing transmission lines (Appendix B). Connected to the Project substation would be a 220 kV gen-tie line constructed within a 150-foot Transmission Corridor that would extend southwest from the Proposed Solar Farm to the planned SCE Ivanpah Substation for interconnection with the SCE transmission line. The current SCE transmission line is 115 kV; SCE is currently in the approval process to upgrade the line from the Mountain Pass Substation, about 20 miles southwest of the Project, to the El Dorado Substation, located approximately 35 miles northeast of the Project. In the area near the Project site the Transmission Corridor runs southwest/northeast through the Project site. The line would be upgraded to 220 kV, capable of carrying 1,400 MW. The El Dorado-Ivanpah upgrade project is under construction with scheduled completion anticipated by July 2013.

2.2.26 Interconnection to Electrical Grid

Interconnection to the CAISO Grid via the SCE operated transmission system would be to SCE's Ivanpah 220 kV switchyard, originating at the onsite Project Substation where the power will be stepped up in voltage from 34 kV to 220 kV and then via a 220 kV gen-tie line to the proposed Ivanpah Substation. An interconnection application was filed with the CAISO on January 9, 2007 and the approved point of interconnection is at the new Ivanpah Substation.

2.2.27 Spill Prevention and Containment

BMPs would be employed in the use and storage of all hazardous materials within the Project, including the use of containment systems in appropriate locations. Appropriately sized and supplied spill containment kits would be maintained on site in the M&M area, and the Applicant's employees would be trained on spill prevention, response, and containment procedures. In addition, in accordance with the Emergency Planning and Community Right to Know Act, the Applicant would supply the local emergency response agencies with a Hazardous Materials Management Plan and an associated emergency response plan and inventory.

The small quantities of hazardous materials to be stored at the Proposed Solar Farm during construction include equipment and facilities maintenance chemicals such as those listed in Table 2-12. These materials would be stored in their appropriate containers in an enclosed and secured location such as portable outdoor hazardous materials storage cabinets equipped with secondary containment to prevent contact with rainwater. The portable hazardous materials storage cabinets may be moved to different locations around the site as construction activity locations shift. The hazardous materials storage area would not be located immediately adjacent to any drainage. Disposal of excess materials and wastes would be performed in accordance with local, State and Federal regulations; excess materials/waste will be recycled or reused to the maximum extent practicable.

Additional construction-period BMPs include:

- Keeping materials in their original containers with the original manufacturer's label and resealed when possible;
- Avoiding excessive on-site inventories of chemicals; procure and store only the amounts needed for the job;
- Following manufacturer's recommendation for proper handling and disposal;
- Conducting routine inspections to ensure that all chemicals on site are being stored, used, and disposed of appropriately;

- Performing timely maintenance on vehicles/equipment that are leaking oil or other fluids, and placing drip plans under the leak when the vehicle/equipment is parked prior to the maintenance event;
- Performing fueling of vehicles and equipment in locations that are protected from spillage onto exposed ground surface
- Ensuring that all personnel dealing with hazardous materials are properly trained in the use and disposal of these materials in accordance with local, State and Federal regulations; and
- Maintaining Material Safety Data Sheets (MSDS) available on the site for use during Project construction and operation.

As noted earlier in Section 2.2.22, the Stateline Solar Farm would not involve the storage of large quantities of hazardous materials compared to other large industrial facilities. The quantity of biodegradable mineral oil stored in Project transformers and the number of transformers on the Proposed Solar Farm would require Project compliance with the applicable regulations of CFR part 112- Oil Pollution Prevention. Facilities would be appropriately designed and a Spill Prevention Control and Countermeasure (SPCC) Plan prepared.

Spill response plans will be developed prior to Project construction and operation, and personnel would be made aware of the procedures for spill cleanup and the procedures to report a spill. Spill cleanup materials and equipment appropriate to the type and quantity of hazardous materials expected would be located on site and personnel shall be made aware of their location. Key employees will be trained in conducting spill response activities in accordance with appropriate procedures. Spill response materials will include, but are not limited to, brooms, dust pans, mops, rags, gloves, absorbent pads/pillows/socks, sand/absorbent litter, sawdust, and plastic and metal containers.

2.2.28 Health and Safety Program

The Applicant has established “Safety First” as a core value. Safety First is included in all aspects of manufacturing and within EPC for engineering design, procurement and construction of a solar array project. First Solar develops an Environmental Health and Safety Plan for all projects to ensure it includes all activities and compliance to all local, state and federal regulatory requirements. The plan is customized as needed for the specific project based on location, scope and hazards. The Stateline Solar Farm will follow all Occupational Safety and Health Administration (OSHA) and California OSHA (CalOSHA) requirements in construction and operation. Illness and Injury Prevention Programs (IIPP) will be developed for construction and operation. For construction activities, all subcontractors are screened to review their safety performance. Safety orientation will be provided to all contractors working on the site to make them aware of all the project safety hazards and requirements and procedures. Tool box safety meetings will be held daily to discuss site conditions, pre-task plans and any new hazards.

First Solar’s manufacturing processes include comprehensive and conservative environmental health and safety (EHS) protocols and processes. First Solar has full time Environmental Health and Safety resources working to ensure a safe work environment and compliance to all EHS regulations and standards. First Solar uses state of the art engineering controls, operational procedures, housekeeping methods, and personal protective equipment to ensure the health and safety of employees as well as the community. First Solar has integrated environmental responsibility into every aspect of the product lifecycle. From raw material sourcing through end of life collection and recycling, First Solar has created a sustainable cycle that protects and enhances the environment. The Perrysburg, Ohio, manufacturing facility is certified to OHSAS 18001 for Health and Safety Management Systems and ISO14001:2004

environmental standards. Manufacturing in Germany and Malaysia are certified to ISO14001:2004 environmental standards.

2.3 OTHER FEDERAL, STATE, AND LOCAL AGENCY PERMIT REQUIREMENTS

2.3.1 Federal Permits and Status

Table 2-14 provides a list of the Federal permits anticipated to be required for the Project, as well as the status of relevant permit applications.

As described in Table 2-14, the Project, which is located entirely on Federal public lands, will require a FLPMA ROW grant, thereby triggering the need for NEPA review. BLM will prepare an EIS to comply with NEPA. BLM will issue the necessary ROW grant through its Record of Decision (ROD) following completion of the Final EIS. The CDCA Plan Amendment(s) required for the Project will also be addressed through the FLPMA and NEPA process.

Due to potential impacts to a species listed as Threatened under the Federal ESA (desert tortoise), BLM will participate in formal consultations with USFWS pursuant to Section 7 of the ESA. A Biological Assessment (BA) will be submitted to USFWS, which will issue a Biological Opinion (BO) and Incidental Take Statement following completion of the consultation process. Biological studies have been conducted in the Project Study Area, as discussed above and documented in Appendix F, Biological Resources Technical Report. The Applicant has taken the results of the biological studies into account in designing the Project through the incorporation of avoidance and, where necessary, mitigation measures to minimize impacts to the species. The Applicant's team will provide support to the BLM during consultation with USFWS.

Although a portion of the project study area includes a small (approximately 58 acres) portion of the Ivanpah Dry Lake, the area to be disturbed by either Alternative B or Alternative B1 will completely avoid this portion of the dry lake. In addition, the ephemeral drainages that are tributary to Ivanpah Dry Lake would not be subject to 404 jurisdiction according to recent USACE guidance following the Rapanos decision, which stipulates that these tributaries to waters of the United States must have a significant nexus to a traditional navigable water in order for those tributaries to be subject to Section 404 jurisdiction. Consultation with the USACE will be required in order to obtain the agency's concurrence with the findings presented above.

Table 2-14 Status of Project Federal Permits and Authorizations

Permit	Lead Agency	Status
FLPMA ROW Grant	BLM	The original Federal Land Policy and Management Act Standard Form 299 ROW application was submitted to BLM in December 2006. A POD was filed in May 2007 that included a 4,160 acre project area. In September 2008, an update to the POD was submitted to increase the project area to 6,400 acres. The applications and PODs were submitted as OptiSolar, Inc. In April 2009, Optisolar was acquired by First Solar Development, Inc. (Applicant), and a revised SF 299 form was submitted in August 2009 to reflect this merger. A revised POD was submitted to the BLM in September 2010. This POD reflects an alternative site layout that is a further and environmentally superior refinement of the alternatives listed in the September 2010 POD. The ROW Grant is subject to NEPA review and terms and conditions as set forth under FLPMA and BLM's implementing regulations. BLM will issue a ROW grant and Record of Decision (ROD) at the end of the NEPA process.
Section 404 Clean Water Act (CWA) Permit	U.S. Army Corps of Engineers (USACE)	The preliminary investigation and assessment of the Preferred Project Site indicates that the Site does not contain waters or wetlands subject to Federal CWA jurisdiction. The Applicant will work with the USACE to obtain written concurrence regarding the lack of Federal jurisdiction under CWA.
Endangered/Threatened Species Consultation and Incidental Take Statement under the Federal ESA	USFWS	The BLM will engage the USFWS in the ESA Section 7 consultation process concurrently with the NEPA review process and will obtain incidental take statement authority, as necessary. The Applicant will provide support for this process. Biological surveys for federally-listed species have been conducted for the Preferred Project Site.
Historic Preservation and Cultural Review under National Historic Preservation Act Section 106	State Historic Preservation Officer (SHPO)	The BLM will consult with the SHPO during the NEPA review process. The Applicant will provide support for this process. Class III cultural surveys will be completed after submittal of the POD.
Native American	BLM	The Applicant is coordinating with BLM to support

Table 2-14 Status of Project Federal Permits and Authorizations

Consultation		BLM's Native American consultations as needed.
CDCA Plan Amendment	BLM	The Project will require a CDCA Plan Amendment. The Plan Amendment will be addressed as part of the FLPMA and NEPA processes.

2.3.2 State Permits and Status

Table 2-15 provides a list of the State permits anticipated to be required for the Project, as well as the status of relevant permit applications.

The Mojave Desert Air Quality Management District will be consulted before construction and during final Project design regarding fugitive dust emissions and the control of such emissions through adoption of a fugitive dust control plan.

The Applicant's consultants have completed the initial investigation and delineation of streambeds and lakes in the overall Project Study Area that will likely be subject to CDFG jurisdiction under the Fish and Game Code. The Applicant has already made provisions during initial project planning and design for avoiding some major drainages that would be subject to CDFG jurisdiction. However, if it is not practicable to avoid adversely affecting other State jurisdictional drainages, a Notification of Lake or Streambed Alteration (Form FG2023) would be submitted to CDFG, who will likely issue a Streambed Alteration Agreement. The Applicant has contacted CDFG regarding any potential for State jurisdiction within the project limits of the Preferred Site.

Table 2-15 Status of Project State Permits and Authorizations

Permit	Lead Agency	Status
Endangered/Threatened Species Take Authorization under California Endangered Species Act (CESA)	CDFG	CESA review and approval will be required for impacts to State-listed species. Focused biological surveys for sensitive species have been conducted for the Proposed Solar Farm (Appendix F). CDFG is expected to be a full participant in agency discussion between BLM and the USFWS so that CDFG can complete a Consistency Determination with the project BO issued by the USFWS. The Applicant will provide input to the agency consultation, as required.
Section 1600-1602 Streambed Alteration Agreement under Fish and Game Code	CDFG	A preliminary jurisdictional delineation indicates that numerous drainages located within the Preferred Solar Farm project limits are jurisdictional under the Fish and Game Code Sections 1600-1602. The Applicant will work with the CDFG to determine the extent of jurisdiction pursuant to Fish and Game Code Sections 1600-1602 and to obtain a Streambed Alteration Agreement.

Table 2-15 Status of Project State Permits and Authorizations

Permit	Lead Agency	Status
Construction and Operations Phase Storm Water Permits under California Water Code/CWA	California State Water Resources Control Board (SWRCB)	The Applicant may be required to prepare SWPPPs incorporating Best Management Practices for storm water management and control, and to file Notices of Intent (NOIs) with the SWRCB.
Section 401 Certification under CWA	Regional Water Quality Control Board (RWQCB)	Section 401 certification would only be required in the event that a USACE Section 404 permit is required, which is not expected based on First Solar's preliminary investigation and assessment of potential jurisdictional waters and wetlands under the CWA.
Dust Control Plan	Mojave Desert Air Quality Management District	A dust control plan will be developed in accordance with Mojave Desert Air Quality Management District requirements prior to construction

2.3.3 Local Permits and Status

Table 2-16 provides a list and status of the local permits anticipated to be required for the Project, as well as the status of these permit applications.

Table 2-16 Status of Project Local Permits and Authorizations

Permit	Lead Agency	Status
Sanitation/Septic System Permit	San Bernardino County	Permit will be secured before construction activities commence.
Well Permit	San Bernardino County	Permit will be secured before construction activities commence. The Applicant has submitted a well construction permit to the County of San Bernardino. A Groundwater Availability Report and a Groundwater Monitoring Plan was submitted as part of the permit application package. The well permit is a discretionary action, warranting CEQA review.

2.4 FINANCIAL AND TECHNICAL CAPABILITY

First Solar has a very strong liquidity position, benefitting from over $500 million in cash and marketable securities as well as an undrawn $300 million credit facility and negligible debt outstanding ($190 million compared to approximately $875 million of Earnings Before Interest, Taxes, Depreciation, and Amortization). Due to its sound credit profile and financial flexibility, First Solar is currently funding all

active projects in the development phase on balance sheets which have totaled over $50 million in 2009 and are forecasted to total in excess of $100 million in 2010. First Solar believes its own balance sheet is the most flexible source of available development capital for its funding requirements.

For construction and term period financing needs of the Project, First Solar intends to solicit debt and equity partners. Over the last year, First Solar has run three successful auctions in the project equity market (focused on strategic equity, private equity, insurance companies, and infrastructure funds), all three of which resulted in secured commitments. In addition, First Solar has started to develop key relationships in the project debt market (bonds, banks, and insurance companies). First Solar's access to the project debt market is also enhanced by its proven access to the capital market, as it secured a corporate credit facility earlier this year with a syndicate comprised of the leading investment banking institutions.

3.0 CONSTRUCTION OF FACILITIES

The construction of the Project will begin once all applicable approvals and permits have been obtained. It will take approximately 2 to 4 years from the commencement of the construction process to complete construction of the Solar Farm and gen-tie line. The following sections provide detail about the Applicant's timeline and process for the construction. Once construction is complete, the Project will be in operation for 30 years.

3.1 DESIGN, LAYOUT, INSTALLATION, AND CONSTRUCTION PROCESSES

The Applicant has performed 30 percent engineering design for the Project, as required pursuant to BLM's POD Guidelines. Appendices A and B, Site Plan Package, includes detailed 30 percent engineering design plans that depict the design and layout of the Project's Alternatives B and B1, respectively. The installation and construction processes for the Project are described in the following subsections.

3.2 CONSTRUCTION AND OPERATIONS APPROACH – PHASED PROJECT

Construction of the Project would occur in two basic phases: (i) construction mobilization and (ii) construction and installation of the solar modules, electrical components, and gen-tie line. Construction mobilization includes preconstruction surveys; mobilization of personnel and equipment (including construction of access roads, and installation of trailers, laydown, and materials storage areas); and site preparation. After construction mobilization, construction of the PV arrays and gen-tie line would begin. Construction of the PV arrays is expected to take place at a pace of approximately 1 MW per day after an initial ramp up period. Additional information on the phased approach is provided in Section 3.6.

3.3 ACCESS AND TRANSPORTATION SYSTEM, COMPONENT DELIVERY, WORKER ACCESS

Proposed access to the Proposed Solar Farm would be provided from main gated entrances on Yates Well Road, approximately one mile west of I-15 (Appendix A). The perimeter of the occupied portions of the Proposed Solar Farm would be fenced to limit public access. Permanent six-foot tall gated chain-link security fences with barbed wire would be constructed around the solar arrays, the Project Substation and the M&M facility. A traffic study for the Project will be prepared as a part of the NEPA process. Truck traffic would approach the site vicinity via I-15, either from the north or south. From I-15, trucks would proceed west on Yates Well Road to the new access road to the Proposed Solar Farm entrance.

3.4 CONSTRUCTION WORKFORCE NUMBERS, VEHICLES, EQUIPMENT, TIMEFRAMES

The construction of the Project would begin once all applicable approvals and permits have been obtained and pre-construction surveys have been completed. It would take approximately 2 to 4 years from the commencement of the construction process to complete the Project.

Typical construction work schedules are expected to be from 7:00 A.M. to 5:00 P.M., Monday through Friday, which complies with the San Bernardino County noise ordinance restrictions for construction activity of 7:00 AM to 7:00 PM except Sundays or Federal holidays. In the event that construction work takes place outside these typical hours, activities would comply with San Bernardino County standards for noise levels. For safety reasons, certain construction tasks, including final electrical terminations, must be performed after dark when no energy is being produced. The Project would use restricted nighttime task lighting during construction that must occur after sundown. No more lighting would be used than is needed in order to provide a safe workplace, and lights would be focused downward, shielded, and directed toward the interior of the site to minimize light exposure to areas outside the construction area.

During construction, the on-site workforce is expected to average approximately 400 employees, with a peak on-site workforce of approximately 500 employees. The construction workforce would be recruited from within San Bernardino County and elsewhere in the surrounding region as much as practicable. Most construction equipment/vehicles would be brought to the Proposed Solar Farm at the beginning of the construction process, and would remain on site throughout the duration of the construction activities for which they are needed; they generally would not be driven on public roads while in use for the Project. Project construction traffic would involve construction worker commuting vehicles, plus periodic truck deliveries of materials and supplies, trash and other offsite truck shipments, and miscellaneous trips by Project staff (e.g., supervisors). Peak vehicular traffic volumes would coincide with the peak of construction employment, which is estimated to be approximately 500 workers. At peak construction, a total of approximately 300 vehicles would make one trip per day to and from the site. Truck traffic during construction is expected to average approximately 30 truck trips per day. However, construction truck deliveries and shipments typically avoid the peak traffic hours in the morning and afternoon, so it is unlikely that they would represent a substantial increase in traffic volumes during the morning and afternoon peak commuting hours.

Table 3-1 lists the type and maximum number of construction/equipment vehicles expected to be in use on the Proposed Solar Farm during the 2 to 4 year construction period.

3.5 SURVEYING AND STAKING

Surveying includes two main objectives: 1) obtaining detailed topographic information for supporting the storm water modeling and grading design, and 2) construction layout surveying with staking. The Applicant is in the process of completing detailed (one-foot interval accuracy) topographic information for the proposed Solar Farm using photogrammetry and field cross sections. Concurrent with the acquisition of topographic data, historic aerial photographs were obtained and analyzed to determine changes in land use and stream channel configurations. The final Site Plans for the Project will be based on the detailed topographic survey of the site that is being performed as a part of the permitting and engineering design process.

Table 3-1 Maximum Construction Equipment /Vehicles On Site by Phase

# of Pieces	Equipment	Purpose	Duration (Months)
	Site Preparation and Clearing/Grading		
6	8,000-Gallon Water Truck	Dust Control / Compaction	10
6	Graders	Road/Staging Prep	10
2	Tractors with Discs	Road/Staging Prep	10
3	10-Ton Rollers	Road/Staging Prep	10
	Underground Work (boring, trenching, installing conduit)		
10	Backhoes or Trenching Machines	Excavation/Backfill	15
4	Sheepsfoot Rollers	Compaction	15
3	5-Cubic Yard Dump Truck	Excavation/Backfill	15
	System Installation/Testing		
26	4x4 Forklift	Material Staging	15
26	ATV Vehicles	Material Staging / Transport	15
6	Pick-Up Trucks	Material Staging / Transport	15
13	Truck-Mounted/Tracked Pile Drivers	Post Installation	15

Road corridors, buried electrical lines, PV array locations, and the locations of other facilities would be located and staked in order to guide construction activities. Pre-construction survey work would consist of staking and flagging the following: 1) ROW and construction area boundaries, 2) work areas (permanent and short term), 3) cut and fill, 4) access and roads, 5) transmission structure centers, 6) foundation structure, and 7) desert tortoise or endangered plant offsets. Staking and flagging would be maintained until final cleanup. Further pre-construction activities are described in Section 3.6.

3.6 SITE PREPARATION, CLEARING, GRADING, AND COMPACTION

Construction of the Project would be completed in three basic phases: 1) pre-construction activities, 2) site preparation and 3) construction and installation of the solar PV modules and electrical components, including the gen-tie line.

3.6.1 Preconstruction Activities

Preconstruction activities would include clearance surveys, fencing, and relocation for desert tortoise; seasonal avoidance of nesting birds; and passive relocation of burrowing owls.

Once these activities occur, the Applicant would begin to mobilize for construction. Construction mobilization includes preparing and constructing site access roads, establishing temporary construction

trailers and sanitary facilities, and preparing construction staging areas. The Proposed Solar Farm would include five separate temporary staging areas as discussed in Section 2.2.16, Temporary Construction Facilities. These staging areas would be used in phases throughout the 2 to 4 year Project construction period.

3.6.2 Site Preparation

Once preconstruction activities are complete, site preparation for the Project would begin. The Applicant would use construction grading and compaction techniques that adequately prepare the site for safe and efficient installation and operation of PV arrays. The discussion below provides preliminary detail relative to the site preparation techniques that may be employed at the Project site. The Applicant would use the results of the field testing to adjust site preparation and construction methods to minimize impacts to vegetation and facilitate site restoration.

Vegetation Treatment/Clearing and Grading. Vegetation would not be removed from the proposed Project site until the onset of a given construction phase. Within the solar field, plant roadways, and areas around the M&M building, vegetation would be disced under, mulched or composted and retained on site to assist in erosion control and limit waste disposal. In some areas to be graded outside of the solar field, native vegetation may be harvested for replanting to augment soil stabilization.

Areas comprising the solar field would be prepared using conventional farming equipment including tractors with discing equipment and vibratory rollers, with limited use of scrapers to perform micrograding within sections of the solar array field. This method improves construction worker safety by creating a fairly level surface and eliminating trip hazards. The site would be contour graded level; the macro level topography and stormwater drainage would remain unchanged, but within each solar array 'high spots" would be graded and the soil cut from these limited areas used to fill 'low spots' within the same array.

With this approach, rubber-tired farming tractors towing discing equipment would disc the top 5 to 7 inches of soil. A water truck would follow closely alongside the tractor to moisten the soil to keep dust at or below acceptable levels. The tractor may make several passes to fully disc the vegetation into the top soil, preserving the underground root structure, top soil nutrients and seed base. A drum roller would then be used to flatten the surface and return the soil to a compaction level similar to the preconstruction stage. The intent of the roller is to compact the soil under the solar field area and even out the surface after the discing is complete.

Lastly, limited use of scrapers for micrograding would be employed to only where needed to produce a more level surface than can be produced by the disc and roll technique. Very limited cut and fill would be completed within specific arrays to limit slope to within 3.0% and produce a consistent grade in each solar field area. Hydrology analysis would evaluate the areas that are susceptible to scour from storm water runoff. The ground would be graded to a level topography using micrograding only where necessary. Vegetation would be cleared from roadways, access ways, and where concrete foundations are used for inverter equipment, substations, and the M&M facilities. Vegetation would be cleared for construction of the drainage controls, including berms. Plant root systems would be left in place to provide soil stability except where grading and trenching are required for placement of solar module foundations, underground electric lines, inverter and transformer pads, road and access ways, and other facilities.

Compaction. The construction process would require moving some heavy equipment across the site, including delivery trucks, pile driving equipment, and cranes. Soil would be compacted to a level that allows this equipment to move across the site. The compaction would be a maximum of 90 percent across the site. The Applicant is performing field testing to determine if a lower compaction level would meet construction requirements and what levels of compaction are compatible with post-construction revegetation.

Site preparation would also require improvement of approximately 149.5 miles for Alternative B and 186 miles for Alternative B1 of aggregate or gravel based road to access different areas of the Project. These roads would be treated with road stabilization material, as needed. Further detail relative to the site access road construction is provided in Section 3.8, Gravel, Aggregate and Concrete Needs and Sources. These roads would be heavily used during construction and would be rarely used during operations. Detail showing a section of the planned access road improvement material is provided in Appendix A, Preliminary Access Road Plan. Table 3-2a provides the estimated acreage of the ground disturbing activities for Alternative B.

Table 3-2a Proposed Ground Disturbance-Proposed Solar Farm (Alternative B)

Type of Disturbance	Acres	Percent of Total Project Area	Notes
Road and Impermeable Surface Graded Area	153.6	7.1%	Includes roads, PCS enclosures, Project Substation, switching station, M&M facility, and staging areas.
Total area of roads	149.5	6.9%	Includes 57.4 miles of new roads proposed at 25 feet in width. Most roads would be treated with road stabilization material.
Impermeable Surfaces	4.8	0.2%	Includes PCS enclosures, Project Substation, switching station, M&M facility, and staging areas.
Site preparation for PV array installation	1,840.7	85.5%	Almost the entire Proposed Solar Farm would require clearing, grading, and compaction for PV array installation. The Applicant will be conducting geotechnical and field testing, as described above, to ascertain the type of soil conditions and develop an optimum installation plan that minimizes soil & vegetation disturbance.
Trenched Area	23.5	1.1%	Required for underground electrical cabling.
Ground Coverage by Above-Ground Modules (Shading)	1,514.1	70.3%	Ground beneath modules would be graded and compacted.

Table 3-2b provides the estimated acreage of the ground disturbing activities for Alternative B1.

Table 3-2b Proposed Ground Disturbance-Proposed Solar Farm (Alternative B1)

Type of Disturbance	Acres	Percent of Total Project Area	Notes
Road and Impermeable Surface Graded Area	215	8.4%	Includes roads, PCS enclosures, Project Substation, M&M facility, and staging areas.
Total area of roads	179	7.0%	Includes 77 miles of new roads, majority at 20 feet in width. Most roads would be treated with road stabilization material.
Impermeable Surfaces	36	1.4%	Includes PCS enclosures, Project Substation, M&M facility, and staging areas.
Site preparation for PV array installation	1,887	73.5%	Almost the entire Proposed Solar Farm would require clearing, grading, and compaction for PV array installation. The Applicant will be conducting geotechnical and field testing, as described above, to ascertain the type of soil conditions and develop an optimum installation plan that minimizes soil & vegetation disturbance.
Trenched Area	24	0.9%	Required for underground electrical cabling.
Ground Coverage by Above-Ground Modules (Shading)	839	32.7%	Ground beneath modules would be graded and compacted.

3.6.3 Construction and Installation

The construction and installation phase involves installation of the PV solar modules and all the necessary electrical equipment to make the Project operational. Construction would also include installation of the gen-tie transmission line and access road.

The first task to occur during construction is to drive the vertical support posts into the ground. These posts would hold the support structures, or tables, on which PV modules would be mounted. Appendix A provides a depiction of the vertical support structures. Prefabricated tilt brackets attach the tables to the vertical posts. Brackets also attach the PV modules to the tables and wire harnesses connect the PV modules to the electrical collection system. Further discussion of the Solar Array Assembly and Construction is provided below.

Trenches are dug for the underground AC and DC cabling, and the foundations for the inverter enclosures and transformers are prepared. Trenching would occur within each array to bury the AC and DC electrical cables. Based on current design, the trenches would be approximately three feet in width and three feet deep; each array would have three to four separate trenches for a total of approximately 1,500 to 1,900 linear feet, depending on the array's proximity to the PVCS. Trenching would also occur between the PCS and transformer locations. It is expected that trenching would disturb 23.5 acres, approximately 1

percent (Alternative B) and 24 acres, approximately 1% (Alternative B1) of the Proposed Solar Farm. The trenched areas would be backfilled filled once the cables are buried and previous contours restored. Electrical cables are laid in the trenches and combiner boxes are also installed. Underground cables connect the PCSs to the on-site AC electric infrastructure, and also connect the PCS to the PVCS. Overhead lines connect the electrical output from the PVCS to the onsite Project Substation.

It is expected that separate construction crews would build the Project Substation and the gen-tie line. During the final system validation and commissioning process, the DAS and monitoring systems would be brought online, the equipment tested, and operational readiness verified. Once commissioning is complete the Project would be brought online and connected to the grid.

3.7 SOLAR ARRAY ASSEMBLY AND CONSTRUCTION

PV modules and module framing assemblies would arrive at the construction staging area in containers on tractor-trailers. The tractor-trailers would utilize the gravel access roads to deliver the modules and the framing assemblies to the array areas. PV modules and the assemblies would be lifted from the tractor-trailers and placed adjacent to the array locations.

Vertical steel support piles spaced approximately 10 feet apart center-to-center are driven into the ground to an approximate depth of 3 to 7 feet below grade. The module framing assemblies, or tables, are then attached to the support posts using tilt brackets. The PV modules would be manually secured to the tables as depicted in Appendix A. Wiring harnesses electrically connect several rows of tables to a combiner box that would deliver power to an inverter in the PCS.

The PCS enclosures are prefabricated concrete structures mounted on prefabricated foundations or vaults. They would be installed at predetermined central locations within each array and then connected to incoming lines from the combiner boxes. After the blocks are installed in a particular area, traffic is expected to be limited to infrequent low-impact traffic in the aisle ways between PV blocks for inspection, maintenance, and repair purposes.

3.8 GRAVEL, AGGREGATE, AND CONCRETE NEEDS AND SOURCES

Prior to construction, approximately 149.5 miles (Alternative B) and 179 miles (Alternative B1) of site access roads would be stabilized with gravel, aggregate or other road stabilization material, such as geotextile fabric. The stabilization materials would be obtained locally to the extent possible. Concrete would be used to create foundations and pads for the Project Substation equipment and the M&M facility. Inverter enclosures and transformers are placed on poured or pre-cast concrete foundations/vaults.
The total volume of gravel, aggregate, and concrete to be used for Alternative B is estimated as follows:

- Portland Cement Concrete (PCC) (pre-cast) = 6,200 cubic yards
- Class II Aggregate Base (for pads) = 1,250 cubic yards
- Class II Aggregate for Gravel Base Road (8 inches thick) = 10,800 cubic yards

The total volume of gravel, aggregate, and concrete to be used for Alternative B1 is estimated as follows:

- Portland Cement Concrete (PCC) (pre-cast) = 7,450 cubic yards
- Class II Aggregate Base (for pads) = 1,500 cubic yards
- Class II Aggregate for Gravel Base Road (8 inches thick) = 13,000 cubic yards

3.9 SOLAR MODULE AND ELECTRICAL CONSTRUCTION ACTIVITIES

Groups of glass PV modules are installed onto the tables as described in Sections 2.2.10 and 3.7, and are wired to the PCS using wiring harnesses with touch-safe connectors. Modules are transported from shipping containers to the location of install. They are placed on the tables and fastened with brackets at the top and bottom of the module.

Once all the modules are installed in an array, they can be electrically connected. The modules are built with standard touch-safe wiring connectors. Workers walk behind each row and plug the wires from each module into a wiring harness that collects all power from each table.

An electrician connects all wiring harness to a combiner box. Each combiner box links the connections from the PV modules. All combiner boxes are wired via underground DC cables to the PCS enclosure. An electrician connects these wires to the inverters and other electrical equipment inside the PCS enclosure. Each inverter converts the DC power to three-phase AC power, which is fed into a step-up transformer. Transformers are connected via underground AC cables to the Photovoltaic Combining Switchgear (PVCS). Each PVCS combines the power output from multiple arrays. Power is then transferred to overhead lines which route all power to the Project Substation. The Project Substation would step the power up to 220 kV for transmission via the 220-kV gen-tie line to the Ivanpah Substation.
Certified electricians in the construction workforce would perform appropriate Project electrical construction activities starting with combiner box connections. Utility journeymen may be required to perform or supervise the higher-voltage electrical construction activities for the Project Substation and gen-tie line.

3.10 AVIATION LIGHTING (POWER TOWERS, TRANSMISSION)

This section is not applicable because there would be no Project facilities, or related facilities, above the height regulated by the Federal Aviation Administration. The nearest airport to the Project site is Jean Airport, about 20 miles north of the project site in Jean, Nevada. McCarran International Airport is located approximately 45 miles northeast of the site in Las Vegas, Nevada. The closest airport in San Bernardino County is the Barstow-Daggett Airport, approximately 100 miles south of the Project site. A new commercial airport, the Ivanpah Valley Airport, has been proposed between Jean and Primm, Nevada and would be approximately 5 miles north of the Project site.

The Solar Farm itself is a low-profile facility; the arrays are less than approximately five feet tall and the M&M facility is approximately 19 feet tall. Project transmission structures would be less than 200 feet tall and would not require lighting, avoiding potential interference with aviation. There is essentially no potential for light interference from the solar arrays to local aviation: the PV modules used in the installation are black and absorb over 90 percent of the light received; as a result, glare from reflected sunlight is not an issue. These type of PV modules have been installed at numerous airports, including

Denver International Airport and Nellis Air Force Base, and studies have found that the reflection from PV array installations do not cause problems for airplanes in the vicinity of the solar farms.

3.11 SITE STABILIZATION, PROTECTION, AND RECLAMATION PRACTICES

Before Project construction begins, the Applicant would determine the appropriate site stabilization measures to be utilized on the Project. A more detailed geotechnical study is planned to support detailed project design, and this study will provide valuable input with respect to soil conditions and needed stabilization measures.

After Project construction relatively minimal amounts of operations and maintenance activities are required during operations. Access roads and aisle ways would need to be maintained, but the project areas covered by panels can support revegetation. Therefore, the Applicant is exploring options to foster revegetation of the Proposed Solar Farm post-construction. As described above, the Applicant is planning to perform field tests of site preparation, revegetaion, and restoration techniques in an environment similar to the Project Site. First Solar has previously implemented similar field tests at a non-desert site to explore options for vegetation treatment and restoration. The test program would examine vegetation removal techniques, stabilization during construction, and revegetation during and after construction.

At the end of the Project's useful life, the Applicant would decommission and completely remove the PV arrays and supporting electrical and facility systems. Following facility decommissioning and removal, the area would be reclaimed according to applicable regulations at the time of decomissioning. Please see Section 7.3.8 for a discussion of the facility decommissioning plans.

4.0 RELATED FACILITIES AND SYSTEMS

4.1 TRANSMISSION SYSTEM INTERCONNECT

The Project would interconnect with the proposed 220 kV El Dorado-Ivanpah transmission system, which would replace the existing 115 kV transmission line, via the future SCE Ivanpah Substation, which would be located 2.3 miles southwest of the Proposed Solar Farm. SCE estimates that the El Dorado-Ivanpah transmission system project, including the Ivanpah Substation, will be completed by July 2013.

4.1.1 Existing Transmission System

The primary transmission system of adequate capacity to accept the proposed solar farm output, which is located in the vicinity of the proposed Project, is the El Dorado-Ivanpah transmission line. This line is currently being upgraded from 115 kV to 230 kV. This upgrade is proposed initially from the Mountain Pass Substation, about 20 miles southwest of the Project, to the El Dorado Substation, located approximately 35 miles northeast of the Project. In the area near the Project site the Transmission Corridor runs southwest/northeast through the Project site.

4.1.2 Proposed Transmission System

The medium-voltage collection system lines (34.5 kV) transmitting power from each PV block would be buried underground from the PCS to the PVCS and would be connected on overhead lines from the PVCS to the on-site Project Substation. At the Project Substation, the Project's output would be stepped up to the existing or proposed transmission system's voltage of 220kV.

The Applicant is considering several different options of transmission structure to support new gen-tie construction including single or double circuit, galvanized or painted, Lattice Steel Tower (LST) or tubular steel pole (TSP) structures. LST are a common type of transmission structure used in high-voltage transmission line applications. An LST is a freestanding steel framework that has been used to support transmission lines throughout the nation. The use of LST offers several advantages as compared to other structure types. Primarily, LST have low maintenance costs and adequate strength-to-weight ratios. High quality, hot-dipped galvanizing of structural members and fasteners assures long-term integrity, reliability, and low maintenance. Because LST have a well-earned reputation for dependability, they are the most likely structure to be used for proposed Project construction.

TSPs are steel poles manufactured in long sections, which taper in cross-sections from the base of the pole to top of the pole. The use of TSP can offer an advantage over LST in certain types of applications, such as locations where ROW width is constrained or space for structure installation is limited. TSP require large footings and are manufactured in long sections requiring use of long-bed trucks for transportation and heavy cranes that can lift and stack the TSP sections for assembly.

The transmission of the stepped up 220 kV power produced by the Project would use overhead construction. Under this method of construction, transmission conductor would be strung overhead on the supporting transmission structures. Heights of structures for the Project would vary widely depending on the electrical clearances required but would be less than 200 feet in all cases.

4.1.3 Ancillary Facilities and Substations

Other than the gen-tie line, described in Section 4.1.2, and the ancillary facilities for the Proposed Solar Farm described in Section 2.2, there are no further ancillary facilities necessary for the Project.

The proposed Ivanpah Substation will be constructed, owned, operated, and maintained by SCE and will be evaluated by the CPUC. It is not part of this project.

4.1.4 Status of Power Purchase Agreements (PPAs)

A Power Purchase Agreement for 300 MW was executed with SCE on August 17, 2009. On October 16, 2009, SCE submitted Advice Letter 2391-E requesting that the CPUC issue a resolution approving the Stateline Contract. The CPUC approved the PPA in September 2010.

4.1.5 General Design and Construction Standards

The specific engineering design for the above described facilities will be negotiated between First Solar, SCE, and CAISO once the Final Facilities Studies are complete. The Project will comply with San Bernardino County, State of California, and International Building Codes. Additionally, the Project will be designed in conformance with the National Electrical Code.

4.2 GAS SUPPLY SYSTEMS

The Project will not use natural gas for power production.

4.3 OTHER RELATED SYSTEMS

4.3.1 Communications System Requirements

For transmission of operational data and to support employees working on site, the Applicant expects to utilize existing wired or wireless telecommunications facilities. In the event that these facilities are not available in the Project vicinity, the Applicant would supplement with small aperture (less than one meter) satellite communications gear.

In addition, the Proposed Solar Farm would be routinely patrolled by pickup trucks and all-terrain vehicles. These vehicles would be operated by supervisors and foremen and equipped with communications devices (cell phones and/or radios) to coordinate any emergency or fire-fighting issues internally and with the local fire department.

5.0 OPERATIONS AND MAINTENANCE

5.1 OPERATION AND FACILITY MAINTENANCE NEEDS

The Project is designed to have essentially no moving parts, no thermal cycle, and no water use for electricity generation. This simple Project design would require only limited maintenance throughout its lifetime. Section 5.2 provides a discussion of anticipated maintenance activities. A depiction of the M&M facility for the Project is provided on Appendix A, Typical Monitoring and Maintenance Facility.

5.2 MAINTENANCE ACTIVITIES

Project maintenance activities generally include all-weather road maintenance; vegetation restoration and management; scheduled maintenance of inverters, transformers, and other electrical equipment; and occasional replacement of faulty modules or other site electrical equipment. The Project's all-weather access roads would be regularly inspected, and any degradation due to weather or wear and tear would be repaired. The Applicant would apply a dust palliative on dirt access roads. This is expected to be needed only once every two to five years.

5.3 OPERATIONS WORKFORCE AND EQUIPMENT

After the construction period, the workforce for M&M and security purposes is estimated to be seven to ten full time workers. Typical work schedules are expected to be during daylight hours only, with the exception of some limited maintenance work required after dark when PV modules are not live and 24-hour on-site security. The expected annual demand for water for sanitary purposes is approximately 12 acre-feet per year.

Only limited deliveries would be necessary for replacement PV modules and equipment during Project operation. Table 5-1 details the expected daily traffic to the Proposed Solar Farm during operations.

Table 5-1 Daily Vehicle Trips During Project Operation

Purpose	Operations Traffic
Employees (daily roundtrips)	Up to 10 vehicles
Deliveries (daily roundtrips)	Up to 10 vehicles

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6.0 ENVIRONMENTAL CONSIDERATIONS

Environmental considerations have been summarized for the Project in Appendix D, Environmental Considerations Table. This table provides a list of the potential environmental impacts of the Project as well as environmental protection and mitigation measures that are proposed to avoid and reduce the Project's impacts. In addition to the environmental protection measures identified in Appendix D, the Project would adopt the applicable desert tortoise protection measures prescribed by the NEMO Plan, and applicable measures adapted to the Project from the BMPs and mitigation measures prescribed for renewable energy projects on public land.

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7.0 SUPPLEMENTAL INFORMATION

The Applicant understands that supplemental information will be required to prepare the NEPA analysis and complete the review process, although it is not required to be submitted with the POD. Some of this information has already been developed and is readily available, and First Solar is summarizing this information below. Additional data will be developed and provided in the future, as more information is obtained during the Project design development phase.

7.1 ENGINEERING AND CIVIL DESIGN

7.1.1 Facility Survey and Design Drawing Standards

The Project would comply with applicable survey, inspection, and design drawing codes and standards as designated by the State of California, the Federal government, and International Building Codes. First Solar is a leader in the development of large-scale solar energy systems and, as such, has technical expertise in conducting facility surveys and preparing drawings and sketches using AutoCAD based on appropriate engineering specifications, design criteria and technical manuals. The Applicant ensures conformance with applicable codes and standards as well as company policies and procedures and conforms to appropriate CAD, ANSI, and ISO drafting standards in both 2D and 3D formats.

7.1.2 Final Engineering and Civil Design Packages

The Applicant has developed 30 percent engineering and civil designs, which are included as part of the SPP included in this POD as Appendix A. The engineering and civil designs will be updated during development of the Project and will be finalized during EIS development prior to Project construction.

7.1.3 Watershed and Drainage Analysis and Calculations

As described in Section 2.2.4, a hydrologic and hydraulics study is included in Appendix G. The hydrological study includes evaluation of the watershed and site drainage as well as surface water impacts.

7.1.4 Watershed Protection and Erosion Control Drawings

Based on the results of the modeling analysis described above, the Applicant has provided grading and erosion control drawings submitted as in Appendix A. These include the Preliminary Grading and Compaction Plans, Proposed Erosion Control Plan and Preliminary Erosion Control Details.

7.1.5 Final Site Grading Plans

The Applicant has developed 30 percent design grading and erosion control plans and details, which are included in this POD in Appendix A. These Site Grading Plans will be updated during development of the Project and will be finalized during EIS development and prior to Project construction.

7.2 FACILITY MANAGEMENT PLANS

7.2.1 Storm Water Pollution Prevention and Protection Plan

Because the Project would disturb more than one acre of land, Storm Water Pollution Prevention Plan (SWPPP) may be required for Project construction. The SWPPP would identify structural and non-structural Best Management Practices (BMPs) to manage the offsite discharge of storm water from the Proposed Solar Farm. Structural BMPs are devices such as de-silting basins or swales; non-structural BMPs refer to operating practices on the site, such as covering and storing potential pollutant source materials in a manner that avoid discharges to the storm water system. A Post-Construction Storm Water Management Plan (i.e., a Site Runoff Control plan composed of structural and non-structural BMPs) will be prepared.

7.2.2 Hazardous Materials Management Plan

Several methods would be used to properly manage and dispose of hazardous materials, petroleum products and hazardous wastes. Waste lubricating oil would be recovered and recycled by a waste oil recycling contractor. Chemicals would be stored in appropriate chemical storage facilities. Bulk chemicals are not expected to be used on site. Most other chemicals would be stored in smaller returnable delivery containers. All chemical storage areas would be designed to contain leaks and spills in containment areas or containment plans. A more detailed hazardous waste management plan indicating types, quantities, storage and management procedures, etc., will be prepared by the Applicant for use in the Draft EIS.

7.2.3 Spill Prevention Control and Countermeasure Plan

The Applicant will prepare a Spill Prevention Control and Countermeasure (SPCC) Plan due to the presence on the site of oil-containing transformers.

7.2.4 Waste Management Plan

All construction operational wastes produced at the Project site would be properly collected, recycled (if possible), treated (if necessary), and disposed of in an appropriate manner and in full compliance with all regulatory requirements. Project wastes would include sanitary wastewater, nonhazardous waste, and potentially small quantities of hazardous waste, primarily liquid. Domestic waste streams such as showers and toilets would be treated using a septic tank and leach field. Heavy solids would settle to the bottom of the septic tank to undergo anaerobic decomposition and slight compaction, and would be removed, as necessary. Liquid effluent from the septic tanks would be distributed to a leach field. It is expected that the leach field would satisfy the needs of the Project for its entire service life. The leach field would be constructed of open tile drains laid in trenches filled with gravel or crushed stone. The trenches permit downward percolation or upward evaporation and transpiration.

Additional data on Project waste streams (quantities, types, storage, handling, and disposal procedures, etc.) will be prepared by the Applicant for use in the Draft EIS.

7.2.5 Integrated Weed Management Plan

Noxious weed control practices for the Stateline Solar Farm have been developed from existing Integrated Weed Management Plans contained in other PODs for Arizona, Nevada and California. The Applicant will coordinate with the BLM, the CDFG and other jurisdictional agencies to identify target weed species

for the Project. In addition, First Solar will coordinate with Caltrans to ensure that noxious weed controls for the Project area are in conformance with road management plans.

7.2.6 Health and Safety Plan

The Project would follow OSHA and CalOSHA requirements in its construction and operating activities. A safety and compliance director would be assigned to the Project to ensure that safety is given the highest priority. A site-specific Health and Safety Plan would be developed, identifying the roles and responsibilities of every employee with respect to safety on the Project.

7.2.7 Environmental Inspection and Compliance Monitoring Plan

The Applicant would develop an Environmental Inspection and Compliance Monitoring program and plan for the Stateline Solar Farm, covering both construction and operation. A qualified individual would be designated to serve as the Project's Environmental Manager. The Environmental Manager would be responsible for development and implementation of the Project's compliance program. They would be responsible for communication and coordination with the applicable regulatory agencies and ensuring compliance with the various conditions and requirements of the full range of Project permits and approvals. The Environmental Manager would be responsible for the necessary record keeping and reporting required by Project permits. They would ensure that all applicable plans are up to date (e.g., Project Spill Prevention Control and Countermeasure [SPCC] Plan. The Environmental Manager's role would include advising Project management of actual and potential compliance/non-compliance issues and for ensuring that Project planning takes appropriate account of compliance issues in advance.

7.2.8 Facility Decommissioning

The Project has a minimum expected lifetime of 30 years. When the Project concludes operations, much of the wire, steel, and modules of which the system is comprised would be recycled to the extent feasible. The Project components would be deconstructed and recycled or disposed of safely, and the Proposed Solar Farm could be converted to other uses in accordance with applicable land use regulations in effect at the time of closure. Consistent with BLM and NEPA requirements, a detailed Decommissioning and Reclamation Plan (Decommissioning Plan) will be developed in a manner that both protects public health and safety and is environmentally acceptable.

Reclamation and Site Stabilization Planning

Conditions are likely to change over the course of a Project lifespan 30 years, and a final Decommissioning Plan will be developed in the future prior to facility closure based on conditions as they occur at that time. The reclamation measures provided in the Decommissioning Plan will be developed to ensure protection of the environment and public health and safety and to comply with applicable laws, ordinances, regulations, and standards.

In general, the Project Decommissioning Plan will address:

- Proposed decommissioning and reclamation measures for the Project and associated facilities;
- Activities necessary for site restoration/re-vegetation, if removal of equipment and facilities is needed;
- Procedures for reuse, recycling, or disposal of facility components; collection and disposal of hazardous wastes; and use or disposal of unused chemicals;
- Costs associated with the planned decommissioning activities and the source of funding for these activities; and

- Conformance with applicable laws, ordinances, regulations, and standards.

The Decommissioning Plan will be developed in coordination with the BLM and submitted to the BLM for review and approval prior to final closure of the facility.

Temporary Reclamation of Disturbed Areas

After closure, measures would be taken to stabilize disturbed areas once equipment and structures are decommissioned and removed from the Project site. These measures will be outlined fully in the Decommissioning Plan. If and when Project structures are removed upon facility closure, the resulting disturbed soil would be stabilized using standard erosion control BMPs (e.g., use of mulch, fiber rolls, silt fences, reseeding, etc., as applicable) until final reclamation measures may be implemented. Only a small portion of the Proposed Solar Farm contains structures that are in direct contact with the ground and thus would create surface disturbance during removal; these include access roads, the M&M facility, septic system and leach field, and associated parking areas; removal of the solar arrays would create minimal ground disturbance due to the small footprint of their pile foundation design. Final reclamation measures would be implemented as soon as practicable after facility closure. The Applicant understands that some measures that support permanent reclamation may need to be taken prior to construction. For example, the reclamation plan may need to include stockpiling and maintaining a nursery for desert cacti, so that an ample supply is available for reclamation during facility decommissioning.

Removal of Power Generation and Substation Facilities

While there are no power generation facilities involved in the Project other than the PV modules, there would be several PCSs, PV Combing Switchgear cabinets, a gen-tie line, a Project Substation, and the Red Bluff Substation. As required, these facilities would be de-energized, decommissioned, dismantled, and removed in accordance with all Federal, State, and local regulatory requirements. Where feasible, Project components would be recycled or reused.

Removal and Recycling of PV Modules

As described in Section 2.2.23, First Solar is committed to philosophy of extended producer responsibility and improving the global environment, and as such has established a Collection and Recycling Program to promote the collection and recycling of PV modules to minimize the potential for modules to be disposed of as municipal waste. The program enables substantially all components of the modules, including the glass and the encapsulated semiconductor material, to be treated and processed into new modules or other products. First Solar funds, at the time of module sale, the estimated costs of collection and recycling including, packaging, transportation, and recycling costs for their PV modules.

Removal of Other Ancillary Facilities

The Project's ancillary facilities would include the M&M facility, parking areas, septic system and leach field, water storage tank, access roads, fencing, lighting, and related infrastructure. When the Project site is removed from power generation service, the Project's ancillary facilities would be reused, recycled, removed, or abandoned based on the desired subsequent use and in compliance with applicable Federal, State, and local regulations. Procedures for reuse, recycling, removal, or abandonment will be fully outlined in the final Decommissioning Plan. Where feasible, Project components would be reused or recycled. If the site is not planned for industrial, commercial, or residential development after Project

decommissioning, ancillary facilities would be removed and the site would be restored to a condition that allows it to be utilized for natural habitat and as rural open space.

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Appendix A Site Plan Package for Alternative B

Sheet	1	Cover Sheet
Sheet	2	Vicinity Map
Sheet	3	Project Study Area
Sheet	4	Site Plan
Sheet	5	Existing Site Conditions – Project Study Area
Sheet	6	Existing Site Conditions – Preferred Project Site
Sheet	7	Land Uses – Project Study Area
Sheet	8	Land Uses – Preferred Project Site
Sheet	9	Ownership Map
Sheet	10	Typical Array Configuration
Sheet	11	Power Conversion System
Sheet	12	Typical Monitoring and Maintenance Facility
Sheet	13	Color Scheme for M&M Facility and PCS Enclosures
Sheet	14	*Reserved*
Sheet	15	Preliminary Construction Staging Plan
Sheet	16	Temporary Construction Offices and Parking
Sheet	17	Existing Hydrological Conditions Map
Sheet	18	FEMA Flood Map
Sheets	19-22	Grading Plans
Sheet	23	Preliminary Erosion Control Plan
Sheet	24	Preliminary Erosion Control Details
Sheet	25	Preliminary Access Road Plan
Sheet	26	Preliminary Fence Plan
Sheet	27	Preliminary AC Electrical Collection System
Sheet	28	Temporary Lighting Plan
Sheet	29	Permanent Lighting Plan

Appendix B Site Plan Package for Alternative B1

Sheet	1	Cover Sheet
Sheet	2	Project Study Area
Sheet	3	Preliminary Site Plan
Sheet	4	Typical Array Configuration
Sheet	5	Power Conversion System
Sheet	6	Conceptual Operational and Maintenance Facility (O&M) Plan
Sheet	7	Preliminary Color Scheme for M&M Facility and PCS Enclosures

Appendix C Existing Easements Information

Table C-1
Existing Uses and Known Easement Within the Project Study Area

Owner	Location Relative to the Preferred Project Site	Use(s)	Width (feet)	BLM Serial File Number
Primadonna Company LLC [1, 2]	Pipeline, powerline, and access road cross northeast to southwest through the northern portion of the Preferred Proposed Solar Farm. The two wells are located outside of the fenceline for the Preferred Proposed Solar Farm. First Solar proposes to re-locate the pipeline, powerline, and access road to outside of the fenceline. Access to the wells would be maintained	Two wells; powerline; pipe line; access road	10’	CA 21617
LADWP [2]	Travels northeast to southwest adjacent to the Transmission Corridor and crosses the Access Corridor	500kV Transmission	200’	CA 16390
SCE [1, 2]	Crosses northeast to southwest through the northern section of the Project Study Area	138kV Transmission & Telephone line	100’ 50’	R 01730
SCE [1, 2]	Travels slightly northeast to southwest through T17N R 14E section 35 ending in section 34 through study area and proposed transmission route	Transmission and Road	50’ 40’	CA 15390
SCE [1, 2]	Travels northeast to southwest starting in the project study area in T17N R14E section35, turning more southwest in section 34 travelling adjacent to the Transmission Corridor and crossing the Access Corridor	Telephone Line	12’	CA 19973
PRMA Land Development Co. [2]	Travels north to south adjacent and to the west of T17N R14E section 35 eastern section line. Project would use this road as a portion of the access route.	Road	40’	CA 35994
PRMA Land Development Co. [2]	Crosses slightly northeast to southwest through T17N R 14E section 35 and crosses the Access Corridor	Pipeline and Well	30’	CA 34119
LADWP [2]	Crosses northeast to southwest through the northern section of the study area	Transmission		LA 052174
LADWP [2]	Crosses northeast to southwest through the northern section of the study area	Transmission		LA 053634
Kern River Gas Transmission Co. [2]	Crosses northeast to southwest through the northern section of the study area	Natural Gas Pipeline	70’	CA 017918
Level Three Communications [2]	Crosses northeast to southwest through the northern section of the study area	Telephone Cable		CA 41418
Worldcom Network Inc. [2]	Crosses northeast to southwest through the northern section of the study area	Fiber optic underground cable	5’	CA 19143
Intermount Power Agency/LADWP [2]	Crosses northeast to southwest through the northern section of the study area	500kV Transmission	200’	CA 8294
Sprint Communications [2]	Travels north to south adjacent to the eastern study area boundary in T17N R14E section 25	Fiber optic underground cable	10’	CA 20105
AT&T Gre Lease Admin [2]	Travels north to south adjacent to the eastern study area boundary in T17N R14E section 24 and 25	Fiber optic underground cable	20’	CA 21604

Plan of Development

Owner	Location Relative to the Preferred Project Site	Use(s)	Width (feet)	BLM Serial File Number
Apex Reinfocing LLC. [2]	Located in T17N R14E Section 25	Access Road		CA 48809
Great Western Development & Investment Co. [1]	T17N R14E sections 23-26 and 35	Quitclaim Deed/Lease		
California & Nevada Water Co. [1]	T17N R14E sections 22-24 and 26	Quitclaim Deed/Water Rights		
Douglas Noland [1]	T17N R14E section 26	Quitclaim Deed/Water Rights		

Notes: [1] Title Report from Stewart Title Co.
[2] BLM LR2000 database at http://www.blm.gov/lr2000

Appendix D Environmental Considerations Table

Environmental Considerations Table

Resources	Project Effects on the Resource	Environmental Protection Measures
Special or Sensitive Species and Habitats		
Special Status Species – Wildlife -Desert Tortoise (*Gopherus agassizii*)	Desert tortoises, which are federally and state-listed as threatened, are found within the Project Study Area and the Preferred Project Site. The Project Study Area is designated as Category III habitat for desert tortoise. Category III habitat is defined as areas that are not essential to maintenance of viable desert tortoise populations, that contain low-to-medium tortoise densities, and that are not contiguous with medium- or high-density areas and in which the population is stable or decreasing. Based on surveys conducted between 2008 and 2011, the project site supports an estimated average density of four tortoises per square mile. Sign of recent tortoise activity was concentrated into three distinct locations: (1) northeast quadrant of Section 22 and southeast quadrant of Section 15; (2) southeastern quadrant of Section 22; and (3) north-central quadrant of Section 23. The Preferred Proposed Solar Farm includes the tortoise concentrations in the north-central quadrant of Section 23.Approximately 2,114 acres of habitat for desert tortoise would be removed with the development of the Preferred Proposed Solar Farm. The Preferred Proposed Solar Farm would be fenced with tortoise fencing, making it unavailable for tortoise use during the lifetime of the project.	As the desert tortoise is a federally and state-listed species, potential Project impacts on this species and its habitat, as well as mitigation for those impacts, will be addressed in during the EIS process and formal consultation with the U.S. Fish and Wildlife Service (USFWS) under Section 7 of the Federal Endangered Species Act and with the California Department of Fish and Game (CDFG) under Section 2080 of the California Endangered Species Act. The Project would implement the general mitigation measures as set forth in the Desert Tortoise Mitigation Measures for the California Desert Conservation Area (CDCA) Plan of 1980 as amended by the Northern and Eastern Colorado Desert Coordinated Management Plan (NECO Plan) and subsequent amendments, as applicable to the Project. The Applicant is attempting to design the Project to minimize disturbance to the desert tortoise to the extent practicable. The results of nearby test site experiments with vegetation clearing and grading methods will allow First Solar to evaluate construction options that may allow less site disturbance. Desert tortoise relocation would occur as described in the Project Biological Opinion (BO), Incidental Take Permit (ITP), and associated CDFG permitting, and would also be discussed in the Project Desert Tortoise Relocation Plan as an appendix to the Project EIS. Unavoidable impacts to desert tortoise habitat would be

Environmental Considerations Table

		mitigated at a ratio indicated in the Project EIS and BO as determined through the formal consultation process.
Special-Status Species - Plants	More than 190 species of plants were identified during the surveys. No Federal- or State-listed (endangered or threatened) species were observed. Eight plant species considered sensitive by the California Native Plant Society (CNPS) were observed: Mojave milkweed, Utah vine milkweed, desert pincushion, Small-flowered androstephium, Parish's club-cholla, viviparous foxtail cactus, Rusby's desert mallow, and nine-awned grass. These populations were clustered in the northern limits of the Project Study Area; the current project design avoids these populations.	The Applicant is designing the Project facilities to avoid known sensitive plant populations. The Applicant will work with the BLM to develop environmental protection measures to minimize impacts to sensitive plant species within the EIS.
Other Special-Status Species - Wildlife	Other special-status wildlife species observed on the site included bighorn sheep, prairie falcon, peregrine falcon, loggerhead shrike, burrowing owl and LeConte's thrasher. Of these special status wildlife species, the loggerhead shrike, burrowing owl and LeConte's thrasher are likely to use the Project site for nesting and foraging; however, none of these species were observed in great numbers. Nesting habitat for prairie falcon does not exist within the Study Area; the nearest possible nesting habitat may exist within the northern region of the Clark Mountains and Stateline Hills located north and west of the Study Area.	The Applicant is designing the Project facilities to provide the minimum level of disturbance necessary in order to complete the proposed Project. The Applicant will work with the BLM to develop environmental protection measures to minimize impacts to sensitive wildlife species.
Candidate Species	There are no known candidate species known to occur in the Project Study Area	Not Applicable
Wetlands or Jurisdictional Waters	There are no wetlands within or near the Project Study Area, and none would be directly or indirectly affected by the Project. The Applicant's consultant has completed the initial investigation and assessment of potential waters or wetlands in the Project Study Area subject to Federal jurisdiction under the CWA. Based on that preliminary assessment, the ephemeral drainages located on the	None applicable for Federal jurisdictional waters, because no such areas are present on site. The Applicant will work with CDFG to determine the extent of jurisdiction pursuant to Fish and Game Code Sections 1600-1602 and to obtain a Streambed Alteration Agreement.

Environmental Considerations Table

	Proposed Solar Farm are expected to be non-jurisdictional under the CWA because the drainages are neither navigable themselves nor hydrologically connected to navigable waters. The USACE will be contacted in order to obtain the agency's concurrence with these findings. Preliminary assessment indicates that the drainage areas located on the Proposed Solar Farm are jurisdictional under Fish and Game Code Sections 1600 to 1602.	
Desert Scrub Vegetation	The Project would disturb approximately 2,153 acres of creosote bush scrub and saltbush scrub vegetation.	The Applicant is designing the Project facilities to provide the minimum level of disturbance necessary in order to complete the proposed Project.
Wild or Scenic rivers	There are no wild or scenic rivers in or near the Project Study Area, and none would be directly or indirectly affected by the Project.	Not Applicable
Introduction of Invasive, Nonnative Species	Soil disturbance and construction and operational activities could introduce invasive nonnative species to the Preferred Project Site and Project Study Area.	The Applicant will develop an Integrated Weed Management Plan and provided in support of the Project EIS. This Plan would be implemented during all Project phases.
Migratory Birds	Bird species on the Preferred Project Site could be affected by project activities.	Nesting bird locations would be temporarily avoided during construction.
Special Land Use Designations		
Areas of Critical Environmental Concern (ACEC)	There are no ACECs within the Project Study Area. The nearest ACEC to the Project Study Area is the Ivanpah Valley and Clark Mountain ACECs. No impacts are expected to ACECs from implementation of the Project.	Not Applicable

Environmental Considerations Table

Desert Wildlife Management Areas (DWMAs)	No portions of the Preferred Proposed Solar Farm, the Transmission Corridor, or Access Corridor cross a DWMA.	None Required
Critical Habitat	No portions of the Preferred Proposed Solar Farm, the Transmission Corridor, or the Access Corridor are in Critical Habitat	None Required
Prime or Unique Farmlands	No prime or unique farmlands would be directly or indirectly affected by the Project.	Not Applicable
Wilderness Areas	The Project Study Area does not overlap any Wilderness Areas, though there are Wilderness Areas in the Project vicinity.	Not Applicable
Cultural and Historic Resource Sites and Values		
Cultural, Paleontologic, and Historic Resources	The Applicant's consultant has performed a Class I records search of the Project Study Area including a 1-mile buffer (Appendix H-1). Within that 1-mile buffer, 34 cultural resources have been recorded, but only 10 resources fall within the Preferred Project Site boundaries. Only 85 acres of the 1,920-acre Preferred Project Site had been surveyed in the last 10 years, so a Class III field survey was conducted of the three Proposed Solar Farm Alternatives, Transmission Corridor, and Access Corridor, with a 100 meter buffer (Survey Area). A total of 139 resources were identified during the	To the extent practical, Project facilities and road and power line routes would be constructed in a manner that avoids potentially eligible cultural and/or historic resource sites and significant paleontologic resources. Other measures would be implemented to mitigate potential adverse effects on identified cultural resources that cannot be avoided, in conformance with BLM and State Historic Preservation Office (SHPO) requirements.

Environmental Considerations Table

	survey, 22 of which fall within the Proposed Solar Farm, Access Corridor, and Transmission Corridor. Additionally, two previously-recorded resources were located within project component areas. Only one of these sites has been evaluated as eligible for the National Register of Historic Places (NRHP). The Hoover Dam to San Bernardino Transmission Line has been previously evaluated as eligible for listing on the NRHP. It is recommended that the other sites be evaluated.	
Native American Tribal Concerns		
Native American Tribal Concerns	In September 2009, a search of the Sacred Lands File (SLF) was requested from the Native American Heritage Commission in Sacramento to determine if there are any known resources of traditional, religious, or historical importance to local Native American groups. The SLF search did not reveal any Native American cultural resources within the Project Study Area, but did indicate the presence of such resources nearby. The BLM will conduct government-to-government consultation with Native Americans as part of the National Environmental Policy Act (NEPA) process.	No Native American cultural resources were identified during the Class III survey. As part of the NEPA process, the BLM will consult with local tribes that may have concerns within the Project Study Area. The Applicant will coordinate with the BLM in order to provide the appropriate level of environmental protection measures for Native American Tribal concerns identified.
Recreation and Off-Highway Vehicle (OHV) Conflicts		
OHV Recreation	There are no developed OHV recreation facilities in or near the Project Study Area, although several BLM-designated "open" off-highway routes run through the northern portion of the Proposed Solar Farm. OHV use within the developed portions of the Project Study Area would not be permitted for safety reasons.	The Applicant is designing the Project facilities to provide the minimum level of disturbance necessary in order to complete the proposed Project. A Route Study will be required to recommend if any of the open routes that will be fenced will require re-routing.
Other Recreation	Ivanpah Dry Lake is a popular recreation area. International championship racing, archery, kite buggying, and land sailing all	The Applicant is designing the Project facilities to provide the minimum level of disturbance necessary in order to

Environmental Considerations Table

	occur on the lakebed. Although there would be no direct impacts to the lake, because it is outside the project area, indirect impacts could occur if sediment loads to the lakebed are affected by upgradient uses (including the proposed Project).	complete the proposed Project. The final design of the project would preserve existing sediment load to the lakebed.
Other Environmental Considerations		
Fugitive Dust Emissions	Project-associated grading and vehicle traffic in unpaved areas may create fugitive dust emissions. The Project could involve grading up to 1,846 acres, or approximately 85.7% of the total Preferred Project Alternative footprint. Limited vehicle access would occur on unpaved roads and access corridors over the operational life of the Project.	A Dust Control Plan will be developed in accordance with Mojave Desert Air Quality Management District requirements prior to construction. The plan will detail control measures to reduce fugitive emissions from construction and operational activities, including but not limited to watering of unpaved roads and other disturbed surface areas, vehicle speed limits, windbreaks, transport container covers, and cleaning and maintenance procedures.
Vehicle Emissions	A maximum of approximately 300 daily vehicle round trips would occur during construction and up to 20 would occur during operations.	The potential impact from construction and operations vehicle emissions will be evaluated during the Environmental Impact Statement (EIS) process.
Hydrology and Water Quality		
Floodplains	The Proposed Solar Farm is located in an area designated as FEMA Flood Zone D. Zone D includes areas with possible but undetermined flood hazards where no flood hazard analysis has been conducted.	The Hydrology and Hydraulics Report (Appendix G) identifies areas that may be subject to flooding. Project components have been located at least 100 feet from areas that would be affected by a 100-year flood event.
Desert Washes and other surface water	The Project site is located in a desert environment, so there are no surface waters most of the year, but the Project Study Area does contain washes that periodically contain water during infrequent rain	The Project would avoid the major washes in its placement of Photovoltaic (PV) blocks and other structures. The Project may obtain coverage under the National

Environmental Considerations Table

	events. It is likely that Streambed Alteration Agreement from CDFG will be required. Various measures are incorporated into this proposed Project to address surface runoff. The Preferred Project Alternative Site avoids the major washes in the Project Study Area. Erosion control measures proposed for the Project are illustrated in Appendix A, Proposed Erosion Control Plan, and Preliminary Erosion Control Details.	Pollutant Discharge System (NPDES) General Permit for Storm Water Discharges Associated with Construction Activity (General Permit) Water Quality Order 99-08-DWQ. As part of expected obligations under the General Permit, the Applicant will prepare and implement a construction Storm Water Pollution Prevention Plan (SWPPP) prior to the commencement of soil disturbance activities associated with Project construction.
Storm Water	Periodic rain events in the Project vicinity could result in sediment-laden runoff flowing onto or from the floodplains in the Project Study Area, especially during Project construction activities.	Best Management Practices (BMPs) will be developed and implemented for construction, post-construction, and operational phases to maintain the integrity of the floodplain runoff. The Project may obtain coverage under the NPDES General Permit for Storm Water Discharges Associated with Construction Activity and will prepare and implement a construction SWPPP prior to the commencement of soil disturbance activities. The construction SWPPP will use control measures such as swales and ditches, stabilized construction entrances, gravel-covered construction staging area, and silt fencing.
Groundwater	During the approximately 2-4 year construction period, approximately 1,900 acre-feet would be needed for construction purposes. During the operational phase of the Project, minimal water would be used for sanitary and potable facilities. Groundwater will be used from new on-site wells.	After completion of the construction phase of the Project, the only water use will be for domestic purposes (drinking, washing, toilets) in the M&M Facility. Water for the construction and operation of the Project would be drawn from a combination of up to two different wells within the Project Study Area operated by the Applicant upon receiving an approval for well construction from the County of San Bernardino. The wells will access water within the South Ivanpah Groundwater Basin.

Environmental Considerations Table

Surface Discharge	No Project-related surface discharges are proposed.	None
Water Supply/Water Use (Construction)	Water would be collected from on-site wells.	Use of groundwater resources would be designed so that there would not be significant impacts to groundwater levels or concentrations.
Water Supply/Water Use (Operational)	During operation, the Project would consume insignificant amounts of water for domestic and sanitary purposes. It is expected that on-site well would be sufficient to meet operational water needs.	The annual demand for water supply for the operation of the Project is expected to be a few hundred gallons per day for domestic uses by Project employees and visitors. The Project would use no water for electricity generation. Use of groundwater resources would be designed, so that there are no impacts to groundwater levels or concentrations.
Visual Resources		
Lighting	For security purposes, shielded, area-specific lighting would be installed at the M&M facility, the Project Substation, the temporary construction staging areas, and possibly on or near each power conversion station (PCS) station.	The level and intensity of lighting would be the minimum needed for security and safety reasons. These lights would be turned on either by a local switch or by motion sensors that would be triggered by movement at a human's height during maintenance or emergency activities. Lights used for a particular operation would be extinguished once that operation has been completed, providing they are not required for ongoing safety or security purposes. There would be no lights around the Project perimeter in order to minimize the Project's visual impact on surrounding receptors and roads. Sensors on the security fencing would alert security personnel of possible intruders. Exterior lights would be shielded and focused downward and toward the interior of the site to minimize lighting impacts to the night sky and to neighboring areas.
Color and	The Project would introduce new man-made facilities to the	A paint color acceptable to the BLM would be used on all

Environmental Considerations Table

Reflection	viewshed.	Project facilities that can be painted, when appropriate, to blend more naturally with the existing setting. Any necessary fencing would be constructed of non-reflective materials or would be treated or painted to reduce visual effects on sensitive viewing areas. The reflectivity of surfaces would be reduced by using non-reflective elements where appropriate and possible. An evaluation of visual resources will be provided in the EIS.
Profile	The Project's PV blocks would cover an extensive ground area with dark-colored PV panels, which would result in a visual impact. As the Project would be situated on nearly flat land, only limited portions of the Project Study Area may be visible at middle distances.	The Project Study Area would use low-profile PV panel structures that would not extend higher than approximately five feet above the ground surface. Heights of other facilities would be 19 feet high for the M&M facility and 200 feet high for the transmission structures.
Geological, Soils, & Mineral Resources		
Geologic Hazards	The Project Study Area does not lie within a designated earthquake fault zone as defined by the Alquist-Priolo Act of 1972, but the Project facilities would be constructed in a seismically active area of Southern California. Riverside County Fault maps show three main faults adjacent to the Project Study Area. None of these faults cross the property; however, one of the faults has been mapped as a concealed fault and partially extends into the southwest corner of the Preferred Proposed Solar Farm. Further details on the risks of seismic activity in the Project area are provided in POD Appendix E, Phase I Geotechnical Report.	The development facilities would be built in accordance with San Bernardino County Building Code requirements. POD Appendix E, Phase I Geotechnical Report, provides background on soils and geologic conditions within the Project Study Area, and the Preliminary Site Design incorporates the findings of this report regarding seismic hazards.
Minerals	No commercial quantities of saleable or leasable minerals are known to exist in the Project Study Area. No mining claims, mill sites, or	None

Environmental Considerations Table

	tunnel sites are located within the Preferred Project Site.	
Soils	Soils would be disturbed during site construction and along access ways during normal operations.	See air quality dust control measures described above.
Public Health and Safety		
Hazardous Waste	The Project would not generate industrial wastes or toxic substances during operation. There would be limited hazardous substances stored on site, as discussed in the POD section covering Waste and Hazardous Materials Management	Chemicals would be stored in appropriate chemical storage facilities. Bulk chemicals are not expected to be used on site. Most other chemicals would be stored in smaller returnable delivery containers. All chemical storage areas would be designed to contain leaks and spills in containment areas or containment plans. Appropriate spill containment and clean-up kits would be kept on site during construction and maintained during the operation of the Project. Construction wastes would be disposed of in accordance with local, state and Federal regulations. Damaged or retired modules would be returned to First Solar's manufacturing facility in Ohio, where they would be recycled into new modules or other new products.
Petroleum Hydrocarbon Waste	Bulk containers of petroleum hydrocarbon fuels may be located in the construction staging area and used during site construction to fuel vehicles.	Bulk fuel containers would be stored in secondary containment to catch any potential fuel spills. Waste lubricating oil would be recovered and recycled by a waste oil recycling contractor. Spilled petroleum hydrocarbon wastes would be collected and transported to an off-site disposal facility authorized to accept the wastes.
Solid Waste	Solid wastes would be generated during the construction phases of the Project. Minimal amounts of solid waste would be generated during the operational phase of the Project.	Solid wastes generated by the Project would be temporarily stored in wind- and wildlife-secure containers on site and then transported to an off-site disposal facility authorized to accept the wastes.
Sanitary Waste	Sanitary waste would be generated during both construction and	During site construction, portable sanitary facilities would be located in the Project Study Area and maintained by a

Environmental Considerations Table

	operational phases of the Project.	local contractor. A septic tank and leach field would be used during Project operation.
Socioeconomics and Environmental Justice		
Socioeconomics (During Construction)	During construction, the expected number of on-site employees would be approximately 400 on average, with a peak on-site workforce of approximately 500 employees. Construction would take place over approximately 15 months. A temporary increased demand for services from local businesses, employment opportunities, and increased demand for temporary housing would likely occur during this time.	None
Socioeconomics (During Operations)	During the operational phase of the Project, the social and economic effects are likely to be minimal. The Project has a minimum expected lifetime of 30 years. The workforce for operations and maintenance is estimated to be up to 10 workers on average for the operational phase of the Project.	None
Environmental Justice	There are no known minority groups or disadvantaged populations living within or adjacent to Project Study Area that would be adversely affected by the Project.	None
Rangeland and Livestock		
Rangeland and Livestock	No public rangelands are known to occur in the Project vicinity and no range allotments have been issued by the BLM for lands within or near the Project Study Area.	Not Applicable
Noise		
Noise	There are only a small number of noise sensitive receptors (a handful	Construction activities would typically be limited to

Environmental Considerations Table

	of scattered residences) within the vicinity of the Project. The Project would generate noise during construction. Typical construction work schedules are expected to be from 7:00 A.M. to 5:00 P.M., Monday through Friday. For safety reasons, certain construction tasks must be performed after dark when no energy is being produced. The Project is not expected to generate noise during normal operations that would adversely affect noise sensitive receptors in the Project vicinity.	daytime hours, thereby minimizing nighttime noise disturbance. Construction activities that must be conducted at night for safety reasons would comply with San Bernardino County standards for construction noise levels.

Appendix E Phase I Geotechnical Report

Appendix F Biological Resources Technical Report

Appendix G Hydrology and Hydraulics Reports

Appendix G-1	**Hydrology and Hydraulics Report for Alternative A (under separate cover)**
Appendix G-2	**Hydrology and Hydraulics Report for Alternative B (Preferred Alternative) (under separate cover)**

The Hydrology and Hydraulics Reports for the Stateline Solar Farm for Alternatives B and B1 will be submitted under a separate cover.

Appendix H Cultural Resources Survey Reports

Appendix H-1 Class I Survey Report (under separate cover)
Appendix H-2 Class III Survey Report (under separate cover)

Appendices H-1 and H-2 contain confidential information and have been submitted under separate cover.

Appendix I Paleontology Literature/Records Review

Appendix J Legal Description

San Bernardino Base and Meridian (SBB&M) Township, Range and Section	
T 17N, R 14E	
Section 13	W ½ SE ¼
Section 14	All
Section 15	All
Section 22	All
Section 23	All
Section 24	W ½ NE ¼, SE ¼, W ½ SE ¼, NE ¼, NW ¼
Section 25	W ½
Section 26	All
Section 34	SE ¼, SE ¼, SE ¼
Section 35	All
T 16N, R 14E	
Section 1	NW ¼ , W ½ SW ¼ , W ½
Section 2	NW ¼, N ½ NE ¼ , N ½ NE ¼ , SE ¼ NE ¼, SW¼, E ½ SE ¼, E ½ SE ¼ , NW ¼ , E ½ SE ¼ , SW ¼ , E ½
Section 3	NE ¼, NE ¼
Section 11	NE ¼, NE ¼ NE ¼, NW ¼, E ½
Section 12	NW ¼, NW ¼, W ½

Additionally, the Project planning area includes a 200-foot wide linear transmission line route that will parallel along the north side of the current location of the 115 kV SCE transmission line through the following sections of Federal Lands:

Township, Range and Section	
T 17N, R 14E	
Section 34	E ½ and SW ¼
T 16N, R 14E	
Section 3	NW ¼

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Appendix K Groundwater Availability Report